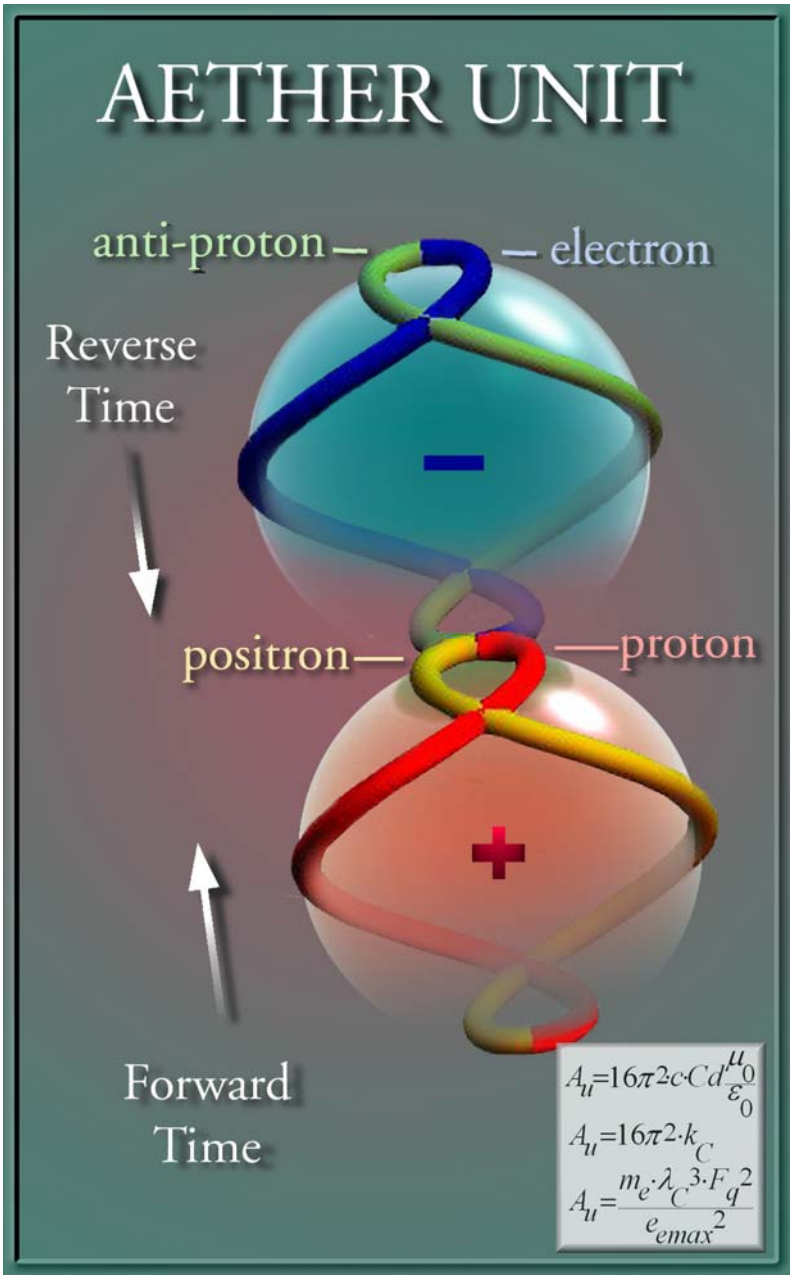
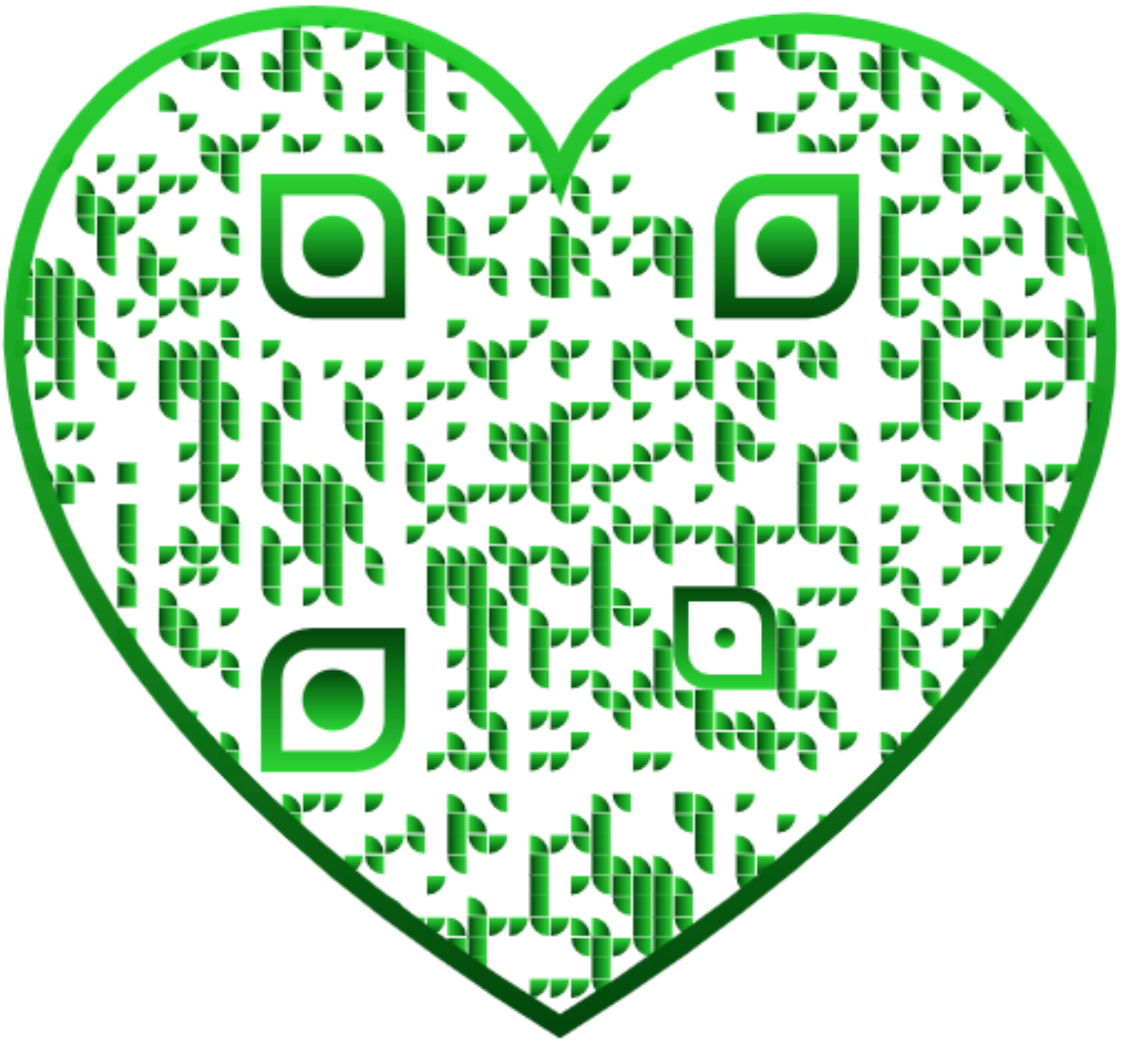
Secrets of the Aether

BY DAVID W. THOMSON III AND JIM D. BOURASSA



Unified Force Theory, Dark Matter and Consciousness

Illustrations by Jon Lomberg



Cover Illustration

Pictured here is the Aether Unit. The "surface of distributed frequency" represents by the double sphere, and relates to electrostatic charge. Forward, linear time is but one aspect of quantum frequency. Forward time and space come together when dark matter enters the rotating magnetic field of the Aether, and produces the subatomic particles of visible matter. Subatomic "particles" exist at various levels of geometry. Mass has circular geometry. The electrostatic charge is spherical in geometry. The strong charge (or electromagnetic charge) has toroidal geometry. All physical existence comes together in the Aether, which has double loxodrome geometry.

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Secrets of the Aether

Unified Force Theory, Dark Matter and Consciousness

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PREFACE

The Crisis in Physics

What a complicated puzzle the world of physics is now! There are endless generations of particles, dark energy that seemingly causes the universe to expand, M-Theories, string theories, super symmetry, and on and on. Quantum mechanics, domain of the very small, and general relativity, domain of the very large, are the pillars of modern physics. However, they can't be unified within the current Standard Model. It seems that the search for a "Grand Unification Theory" is leading to a reevaluation of the very fundamentals of physical science.

Re-discovering the Aether

What if the ancient and universal idea of Aether proved to be the true foundation of reality? Acknowledgment of the Aether solves many problems in physics. A dynamic Aether would explain some of the most complex difficulties in the Standard Model.

Imagine that the universe is an ocean of living energy. As the search for the true nature of space-time gains momentum, we are seeing that new discoveries and theories in space-time look more and more like the ancient concept of the Aether. Instead of space being emptiness, a void of nothingness, it begins to appear that space is the mother of everything. The "Quantum Foam" of the modern physicist is a vibrant and dynamic caldron.

Vacuum Energy is being explored for potential as a source of endless energy. As Dark Energy, it is explaining how the universe expands at an increasing rate. Because of breakthroughs in the precise measurement of the amount of mass in the universe (measurements of cosmic background radiation, galactic distribution, and supernovae speed), we now know that ordinary matter and energy play a minor part. The Aether could explain the "missing mass" in the universe.

The major paradigm shift is that space-time is a thing. Space-time is like a fluid. We give space-time a name, to differentiate it from the concept of a void of nothingness. That name is Aether, a tribute to the ancient term for the firmament above Earth. Once you understand that all matter obtains its nature within the active "stage" of the Aether, then a holistic explanation appears that could be called nothing other than a Theory of Everything.

Einstein's Question Answered

Maxwell's physics suggested that space is occupied by a light-conducting medium, which he called the "Aether." In 1887 Michelson and Morley

designed an experiment (the MMX) to find this Aether. They used an interferometer to compare the speed of light in the direction of the earth's 30-km/sec motion around the sun with that at right angles to this motion. To their surprise, they found no fringe shift, indicating that the speed of light was the same in all directions. This result is known as the MMX null result. In spite of the null result of the MMX, Michelson remained a firm believer in the existence of Aether until his death. The problem was they were searching for an Aether they assumed was at absolute rest, a stationary and solid Aether. That incorrect assumption and the inability to find an "Aether wind" caused physicists to dismiss the Aether for over a century.

A recent Scientific American article called "An ECHO of Black Holes" (December 2005 issue) postulates that space-time is literally a kind of fluid, like the ether of pre-Einsteinian physics. In the article, Professors Jacobson and Parentani state: "The unification of general relativity and quantum mechanics may lead us to abandon the idealization of continuous space and time and to discover the atoms of spacetime."

The greatest discovery in science was the verification that all matter is composed of atoms, first proposed in 1803 by English chemist John Dalton. All disciplines of science are derived from that fact. The second greatest theory came in 1905 when Einstein published general relativity, showing that the presence of mass and energy "curves" space-time, and this curvature affects the path of free particles (and even the path of light). We believe that the third greatest theory, which is introduced in this book as the Aether Physics Model, is that all particles and fields have their basis in a dynamic, quantum-scale Aether.

Einstein tried unsuccessfully during the last 30 years of his life to develop a theory that would represent forces and material particles by fields only, in which particles would be regions of very high field intensity. As a "knot" in space-time, a toroidal vortex of Aether explains the spin, charge, and mass of fundamental particles and provides the answer that Einstein searched for. In this book, we define the Aether Unit's geometry and spin structure. As shown on the book cover, this 5-D representation includes three dimensions of length and two dimensions of frequency. We call this "space-resonance", and the parameters were induced directly from empirical measurements of electrons, protons, Coulomb's constant, the Newton gravitational constant, Planck's constant, the speed of light, and the permeability and permittivity of space.

QADI's Aether Physics Model

In February, 2002, David Thomson III discovered the Aether Physics Model. I was seeking a mathematical basis for my Planck-scale Aether hypothesis. We decided to join our research, resources, and talents to fully develop the model, and incorporated the Quantum AetherDynamics Institute in 2004, with my position as Executive Director and Mr. Thomson as Science Director. Since then, our combined efforts have

produced substantial progress in the field of quantum physics and we are poised to create the next major revolution in physics.

Our Aether Physics Model is mathematically viable and bases on the same empirical data as established physics. However, the theory goes much further, becoming the "Grand Unification Theory" by unifying the four known interactions, or forces - the strong, electromagnetic, weak and gravitational forces. Using the principle of reductionism, the forces are unified by a simple set of general laws explainable by the fabric of space-time itself. Among other accomplishments, from first principles the Aether Physics Model accurately predicts the relative strengths of the forces, and the 1s 'orbital' electron binding energy for all the elements. We show that the fundamental constants in physics are not just random values, but have an exact value based upon a quantum-scale, dynamic Aether (the Aether unit has a precise value equal to Coulomb's constant times $16\pi^2$). The Aether Physics Model is stunning in that it mathematically predicts and explains the measured values of physics with striking precision**.**

If you are educated in the traditional Standard Model of Particles and Fields, I urge you to put aside your natural tendency toward automatic rejection of the revolutionary ideas in this book. Open your mind to the Secrets of the Aether, for the riches you find here will be worth the effort of changing your opinion about the Aether. Understanding of the Universe can only start with an appreciation of the Aether. Within the chapters of this book, we will show that the Aether is a fabric of quantum rotating magnetic fields with electromagnetic, electrostatic, and gravitational dipole structures. Our theory identifies subatomic particles as angular momentum encapsulated in a quantum, rotating magnetic field. With this model, all quantum, atomic, and molecular processes can now be precisely modeled, leading to discrete physics with new understandings and insights. The theory is testable, coherent, mathematically derived, empirically based, and uses easy-to-understand Newtonian equations.

Since the first edition of this book appeared in 2004, we have achieved many major milestones. We were invited to present our flagship paper, A New Foundation for Physics, before distinguished scientists at the Physical Interpretations of Relativity Theory conference held in London, in September, 2006. Our presentation was also covered by the American Association for the Advancement of Science. The paper was published in the September/October 2006 edition of Infinite Energy Magazine. A favorable editorial appeared on United Press International. Two more papers, Calculating the Unified Force Theory and Electron Binding Energies, have been accepted by the Hadronic Journal, a peer reviewed physics journal. We are in ongoing communication with dozens of physics PhD's. We now have an Executive Board, a growing Advisory Board, and a dedicated team of volunteers.

Now that the Aether Physics Model quantifies the quantum structure and we

have produced our first set of equations, the analysis must develop further until it explains all aspects of the atom. We should then be able to quantify the structural aspects of associated molecules. No other theory has ever come close to matching the scope and promise of the Aether Physics Model. Beyond a revolutionary paradigm of the fundamental laws and taking all the disciplines of science to a new level, practical applications of availing the Aether could include benefits to humanity such as anti-gravity, clean energy, and fully developing biotechnology and nanotechnology.

Welcome to the Aether Age!

Jim D. Bourassa
Executive Director
Quantum AetherDynamics Institute

Chapter 1

QUANTUM STRUCTURE

The Aether Physics Model is a discrete model of quantum structure. While this book will show alternative explanations of certain Standard Model concepts of quantum structure, it is a tribute to the genius of the thousands of physicists and engineers contributing to the Standard Model theories and data. The Aether Physics Model depends on the empirically derived data that made the Standard Model useful.

Standard Model - Definition

A model of fundamental forces and particles that explains their behavior and interactions in terms of symmetries and the destruction of symmetries.[1]

The Standard Model of Particle Physics, generally referred to as "Standard Model," is the name given to the current theory of fundamental particles and their interaction. This theory includes:

- Strong interactions due to the color charges[2] of quarks and gluons.
- A combined theory of weak and electromagnetic interaction, known as electroweak theory, that introduces W and Z bosons as the carrier particles of weak processes, and photons as mediators to electromagnetic interactions.[3]

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[1] The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

[2] QUANTUM CHROMODYNAMICS (QCD), quantum field theory that describes the properties of the strong interactions between quarks and between protons and neutrons in the framework of quantum theory. Quarks possess a distinctive property called color that governs their binding together to form other elementary particles. Analogous to electric charge in charged particles, color is of three varieties, arbitrarily designated as red, blue, and yellow, and—analogous to positive and negative charges—three anticolor varieties. Just as positively and negatively charged particles form electrically neutral atoms, colored quarks form particles with no net color. Quarks interact by emitting and absorbing massless particles called gluons, each of which carries a color-anticolor pair. Eight kinds of gluons are required to transmit the strong force between quarks, e.g., a blue quark might interact with a yellow quark by exchanging a blue-antiyellow gluon. "Quantum Chromodynamics," The Columbia Encyclopedia, 6th ed.

[3] W AND Z PARTICLES elementary particles that mediate, or carry, the fundamental force associated with

The Standard Model includes (or excludes) many other theories concerning particle structure and behavior, depending on which authority is consulted. In general, at least as far as this book is concerned, the Standard Model includes all accepted modern theories contributing to the understanding of particle behavior insofar as particles are labeled photons, electrons, protons, neutrons, muons, pi mesons, quarks, tau, and there are numerous others. Moreover, since the "mass equivalence to energy" paradigm is often a part of the explanation of Standard Model theory, the Standard Model may sometimes be interpreted to include Einstein's Special Relativity theory.

The Standard Model is a collection of interpretations concerning quantum physical observations, while the Aether Physics Model is at times a very different interpretation of the same data. Therefore, we will refute some of the paradigms of the Standard Model and replace them with different paradigms from the Aether Physics Model.

The process of the Standard Model, more often than not, predicts subatomic behavior based on macro object characteristics (billiard ball particles with momentum, mass equals matter, fuel equals energy, force equals mass times acceleration, etc). The Aether Physics Model begins with quantum constants, looks for fundamental patterns, and then mathematically and dimensionally develops the theory of subatomic structure while allowing for new paradigms (primary angular momentum, non-material existence as the ultimate source of physical existence, geometric structure of charge, Unified Force Theory, etc).

This book is a foundational introduction to the Aether Physics Model, which, including a completed Unified Force Theory, already explains many previously unanswered physics questions. Nevertheless, there are at least a few unfinished concepts presented in this book as well. The Aether Physics Model is so fruitful in revealing the true nature of the world that it will require decades to complete it in every aspect. So in some cases the reader receives as much of the theory as has been so far developed, with occasional suggestions for further development of a specific new physics concept. There is no claim that the Aether Physics Model is complete or that this book provides all the answers a physicist could ask.

The reader will not want to throw away their Standard Model texts and rely solely on the Aether Physics Model, at least not yet. Much work remains to bring the Aether Physics Model to par with the Standard Model. As part of our ongoing research and the fruitfulness of the Aether Physics Model, this third edition contains significant additions to theory, and it drops some sections that were included in the first and second editions.

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weak interactions. The discovery of the W and Z particles at CERN (the European Laboratory for Particle Physics) in Geneva, Switzerland, in the early 1980s was an important confirmation of electroweak theory, which unifies the electromagnetic and weak forces. The W and Z particles are quite massive for elementary particles; they are roughly 100 times as massive as the proton. "W and Z Particles," The Columbia Encyclopedia, 6th ed.

The promise of the Aether Physics Model is this: once completed, it will provide a solid foundation for understanding the structure of the Universe in which we exist.

It is important to point out that the Standard Model is also not complete. And while the Standard Model may presently provide numerical answers to problems not currently addressed by the Aether Physics Model (half-life of atoms, for example), the Aether Physics Model already provides key solutions to physics not presently solved by the Standard Model (a Unified Force Theory, for example). *It will likely require many physicists and engineers to complete the Aether Physics Model, just as it took many physicists many years to develop the Standard Model.*

The foremost difference between the Standard Model and the Aether Physics Model is in the systems used to analyze the data. The Standard Model often removes all dimensions from the data and treats the data as numerical entities. This allows physicists to intentionally or inadvertently stretch the rules of reality, invent unfounded rules, convert one physical order of reality into another, or skip over poorly understood natural physical structures. In the Aether Physics Model, the data collects in its dimensional and geometric form, processes in its dimensional and geometric form, and the equations materialize in dimensional and geometric form. There is no room for misinterpretation of the physical structures or the data since we always account for the dimensions and geometry.

Also, by keeping the dimensions and geometry with the data and the equations, the physicist is forced to give up old concepts of quantum structure when the dimensionally and geometrically analyzed processes don't allow for the maintenance of old conceptual structures. For example, the Aether unit and its geometry influence the physicist's understanding of other empirical constants, since the dimensions and geometry remain present.

One cannot convert the truth of the Aether's existence to non-existence "just because," as Albert Einstein reportedly did. If the measurements and data show that the Aether unit exists, then the Aether unit exists whether or not modern physicists and engineers are clever enough to detect it directly.

Not Just for Physicists

This Aether Physics Model appeals to a wide range of readers. Unlike the Standard Model of particle physics, nearly all the key equations in the Aether Physics Model flow with a basic understanding of algebra. The Aether Physics Model has a potential audience of philosophical and religious communities, as well as the scientific community. Scientists, philosophers, and others will have an opportunity to explore this remarkably coherent, mathematically derived, and empirically based theory of quantum structure that unifies all of physical existence as well as certain aspects of consciousness.

There is an absolute truth regarding the nature of the physical world, and as will be seen in these pages, the physical world appears to have a non-material origin. The physical world precisely quantifies because the underlying dimensions and geometry that make up the physical world measurements are real. In addition, since the dimensions and geometry are real, then the origins of the dimensions and geometry must be real. Nevertheless, as we progress in reductionism, we eventually run out of physical things to observe. Therefore, just as it is appropriate to look for the physics themselves, it is appropriate to look for the origin of the physical world even if it is non-material.

Interspersed with the physics in this book are metaphysical hypotheses. As is the case for all metaphysics, whether of science, religion, or philosophy, it is up to the reader to evaluate whether the metaphysical concepts have any meaning at all. Ultimately, if some part of us belongs to this Universe, and it appears it does since we interact with it, then the quest for the metaphysical origin of the Universe might also be a quest for the metaphysical origin of our true existence.

Just as we will see how physical existence never becomes a definite reality though we follow the progression from the level of dimensions toward the level of human existence, we also will understand how "self" *appears* to share this inability to find definite reality. It would appear that our personal identity materializes from our complex perception of the physical world. Perhaps as we explore the experience of our mind as it relates to each level of physical existence, we might find courage to familiarize ourselves with the non-material origin of our existence and experience a true and complete metaphysical experience.

Scope of the APM

The Aether Physics Model is science that lends itself well to ontological philosophy. The ontology of the APM is perfect in that it reveals absolute knowledge at the quantum level, is based on empirical data, and it appeals to common sense. The APM is a kind of creation theory that shows a logical evolution of non-material, but real, dimensions into complex forms of physical existence.

Conversely, one could also look at the Aether Physics Model as a perfect reductionism of physical structures. Each physical form ultimately manifests as a collection of molecules, which in turn are collections of atoms. The atoms construct from units of angular momentum, and these units are composed of quantum measurements, which at the finest level of physical perception arise from dimensions. Undoubtedly, the dimensions arise from a yet more primary, albeit non-material Source. This book focuses on that range of physical existence from dimensions to molecules. This book also explains how consciousness interfaces with physical existence.

The reader should question whether reductionism should proceed as Zeno's

paradox, whereby mere mathematical division reduces systems. However, if this were the case, what would be the physical principle for mathematically dividing something into infinity? A human being is an entity. If we reduce the entity, we find it builds from bodily organs and parts such as heart, liver, skeleton, and skin. We do not say that humans build from smaller humans. Similarly, the organs build from cells, which have a level of existence that is very different from the organs. Moreover, the cells build from molecules, which are a more basic order of reality than the cells. The atoms that make up the molecules are a yet more simplified order of existence than the molecules. The subatomic particles are yet a simpler order of existence than the atoms. Moreover, the dimensions that make up the units of subatomic particles are a still more fundamental order of existence.

So one needs to question whether the Standard Model interpretation of so-called "particles" is accurate since atoms are truly the smallest particles of physical matter. Molecules are systems of particles; and electrons, protons, and neutrons are subsystems of particles. By labeling everything a particle, the Standard Model completely ignores the various observable taxonomies of existence.

Many structural concepts from the Standard Model sub-theories, such as wave-particle duality[4], color forces[5], flavors[6], up and down characteristics[7], and the equivalence of energy and mass[8] have no meaning within the Aether Physics Model. These concepts and others fade behind a single structural theory of angular momentum and Aether units, revealing a fresh paradigm for understanding physical structures, which is self-consistent throughout.

Note

The foundation for the Aether Physics Model is the same empirical data used by the Standard Model. However, we must understand the Aether Physics Model within its own context and not necessarily within the context of Standard Model concepts.

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[4] "Light," The Columbia Encyclopedia, 6th ed.

[5] "Quarks possess a distinctive property called color that governs their binding together to form other elementary particles" "Quantum Chromodynamics," The Columbia Encyclopedia, 6th ed.

[6] "This particle, a meson, was made of a fourth flavor of quark, called charm. (Since then two more flavors have been added to the menu: bottom, in 1976, and top, in 1995. Each of these six quarks has a corresponding 'antiquark,' bringing the total to 12)." Alex R. Dzierba, Curtis A. Meyer and Eric S. Swanson, "The Search for QCD Exotics," American Scientist Sept. 2000: 406

[7] "The quarks found in ordinary matter are the up and down quarks, from which protons and neutrons are made. A proton, for instance, consists of two up quarks and a down quark, and a neutron consists of two down quarks and an up quark." "Elementary Particles," The Columbia Encyclopedia, 6th ed.

[8] "According to the law of mass - energy equivalence, developed by Albert Einstein as part of his theory of relativity, a quantity of matter of mass m possesses an intrinsic rest mass energy E given by $E = mc^2$, where c is the speed of light." "Matter," The Columbia Encyclopedia, 6th ed.

Most of modern physics laws also carry over to the Aether Physics Model. Ohm's law, the force laws, conservation laws, and nearly all other physics laws operate the same in both models, although the dimensions of the units may be different where charge is concerned.

The Aether Physics Model (APM) begins as an ontological[9] structural model based on empirical data. The ontology of the APM begins with the proper understanding of dimension and measurement, and with the understanding that space-time[10] is equally as important as the matter that resides within it. In turn, space-time is just one aspect of the Aether unit. Aether implies more qualities to space-time than merely the dimensions of length and time. In addition to length and time, the Aether also includes the dimensions of mass and charge. And as odd as it may initially sound, charge has solid angle geometry. Space-time is actually space-resonance, as will be discussed later.

The Standard Model of Particle Physics describes electrons, photons, protons, neutrons, and even things like gluons and quarks as "particles." In the Aether Physics Model, these "particles" are not solid, nor are they pieces of something solid. The very basic form of physical existence is termed "primary angular momentum" when we discuss its mechanical structure. When discussing a stable form of primary angular momentum in general, we will call it "onn" (onta when plural)[11]. Whatever process it was that first thrust onta into existence, it is the Aether that maintains the onn spin, and accordingly the structure of all physical matter. Though it may sound counterintuitive at first, physical matter, as we know it, is actually a trace of the Aether. In other words, physical shape actually comes from non-material Aether, and is not an inherent property of matter.

Furthermore, since matter is contained within Aether, matter does not move in space-time. Rather, space-time moves relative to itself. Matter is carried through space-time like dust is carried in the wind and algae is carried in ocean currents. Aether has a fluid characteristic such that one region of space-time can flow past another region, like the Gulf Stream can flow past the Sargasso Sea in the North Atlantic Ocean. Strictly speaking, neither time travel nor space travel is possible. Only the rearranging of the Aether is possible, and hence, certain relativistic-like effects seem to occur.

A distinction rises between stable matter and collision effects in the Aether

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[9] Definition: Ontological - "Of or relating to essence or the nature of being."

[10] Definition: Space-time – "The four-dimensional continuum of one temporal and three spatial coordinates in which any event or physical object is located." Space-resonance is the five-dimensional continuum of two temporal and three spatial coordinates.

[11] "There was a time when physicists regarded protons and electrons as particles, photons as waves. As we shall see later, this distinction can no longer be maintained. They are still often called "elementary particles," but as we shall also learn neither the word "elementary" nor the word "particle" fits the case. Let me name them simply onta (singular: on) after the Greek word for being (Ον, plural Οντα)." Henry Margenau, Open Vistas; Philosophical Perspectives of Modern Science (New Haven, CT: Yale University Press, 1961) 118.

Physics Model. Electrons and protons are two stable forms of matter, as well as their anti-particles, the positron and anti-proton. Neutrons are composite particles of a proton and electron and they remain stable as long as the bound pair remains in an atomic nucleus. However, the muon, tau, quarks, and other extremely short-lived "observed particles" are merely collision or "unbinding" effects. The collision effects offer some insights into the processes of physics, but are of little more use for quantum structural science than crash tests are for automobile manufacturers. Although particle accelerators are useful technology, one has to question just how many we need. It would be far more productive to focus our scientific inquiry on the actual physical structures of stable matter, than to focus too much attention on collision effects.

A New Dimensional Analysis

The Aether Physics Model makes extensive use of quantum measurement analysis, which is very similar to dimensional analysis[12]. Calculus equations are not necessary for understanding the essential structures of quantum existence. Therefore, the Aether Physics Model is easier to comprehend than the Standard Model concepts of quantum structure.

Because the Aether Physics Model is fully compatible with Classical Mechanics (logically modeled physical *processes*), the APM is inherently discrete. Theoretically, if a computer could compute faster than the speed of light, a computer model of the entire Universe could develop from the Aether Physics Model.

Just as the Standard Model improperly classifies all forms of existence as particles, it has an ambiguous lexicon in other areas, too. In order to better use quantum measurement analysis, APM offers specific definitions for "unit," "measurement," "dimension," and "constant." Regardless of the variant definitions for these terms in our present culture, this book will use these words as defined in the following pages.

There are two different uses of the term "unit" common in physics, namely units of measurement and units of dimensions. The differences between the two uses are significant when we examine the structure of equations.

Unit Definitions

1. Unit of Measurement - any division of quantity accepted as a standard of measurement or exchange; "the kilogram is the MKS unit of mass"; "a unit of frequency is the Hertz."

2. Unit of Dimensions - an individual, group, structure, or other entity regarded as a structural or functional constituent of a whole; "velocity is a unit equal to the dimensions of length per time"; "the dimensions of charge divided by time equal the unit of current."

[12] "The expression of any particular quantity in terms of fundamental quantities is known as dimensional analysis and often provides physical insight into the results of a mathematical calculation." "Dimension, in Physics," The Columbia Encyclopedia, 6th ed.

In the case of the "unit of measurement," it would be far more logical if we simply called it measurement, and not unit. For example, we should call the kilogram the MKS "measurement" of mass, not its "unit" of mass. The term "unit" best defines, with regard to physics, a specific arrangement of dimensions. This clarification would eliminate a lot of confusion.

Systems of Measurement

There are three generally accepted systems of measurement used in physics; cgs measurement, MKS measurement, and SI measurement. The Aether Physics Model utilizes a new system of measurement, based on quantum measurements.

The SI definition here quotes verbatim from its original source (unlike the MKS definition just below) because the SI system is an unnatural system of measurement, which consists of units (the Ampere) as basic measurements. It is largely the SI system of measurements, and generally the lack of clear definitions for "measurement," "dimension," and "unit," that perpetuate confusing terminology in our present systems of measurement.

Here is a brief overview of the various systems of measurement:

CGS Measurements

A system of measurement based on the metric system, having the centimeter of length, the gram of mass, and the second of time as its fundamental units. Some cgs units are the dyne of force and the erg of work or energy. The measurements of the cgs system are generally much smaller than the comparable measurements of the MKS system.[13]

MKS Measurements

A system of measurement based on the metric system and having the meter of length, the kilogram of mass, and the second of time as its fundamental measurements. Some MKS units include the newton of force, the joule of work or energy, and the watt of power. The measurements of the MKS system are generally much larger and of a more practical size than the comparable measurements of the cgs system. The MKS system provides the basis for the International System of Measurements (SI)[14] and the new Aether Physics Model quantum measurements.

[13] Paraphrased from "Cgs System ," The Columbia Encyclopedia , 6th ed.

[14] Paraphrased from "Mks System ," The Columbia Encyclopedia , 6th ed.

SI Measurements

INTERNATIONAL SYSTEM OF UNITS officially called the Système International d'Unites, or SI, system of units adopted by the 11th General Conference on Weights and Measures (1960). It is based on the metric system. The basic units of length, mass, and time are those of the MKS system of metric units: the meter, kilogram, and second. Other basic units are the ampere of electric current, the kelvin of temperature (a degree of temperature measured on the Kelvin temperature scale), the candela, or candle, of luminous intensity, and the mole, used to measure the amount of a substance present. All other units are derived from these basic units[15].

Current Definitions of SI Measurements by the National Institute of Standards and Technology (NIST) as follows:

The meter is the length of the path traveled by light in vacuum during a time interval of $1/299{,}792{,}458$ of a second.

The kilogram is the unit of measure for mass; it is equal to the mass of the international prototype of the kilogram[16].

The second is the duration of $9{,}192{,}631{,}770$ periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the cesium 133 atom[17].

The ampere is that constant current which, if maintained in two straight parallel conductors of infinite length, of negligible circular cross-section, and placed 1 meter apart in vacuum, would produce between these conductors a force equal to $2\times10^{-7}\,newton$ per meter of length. The kelvin, unit of measurement for thermodynamic temperature, is the fraction $1/273.16$ of the thermodynamic temperature of the triple point of water.

The mole is the amount of substance of a system, which contains as many elementary entities as there are atoms in $0.012kg$ of carbon 12; its symbol is "mol." When the mole is used, the elementary entities must be specified and may be atoms, molecules, ions, electrons, other particles, or specified groups of such particles.

[15] "International System of Units ," The Columbia Encyclopedia , 6th ed.

[16] "fundamental unit of mass in the metric system, defined as the mass of the International Prototype Kilogram, a platinum-iridium cylinder kept at Sèvres, France, near Paris." "Kilogram," The Columbia Encyclopedia, 6th ed.

[17] "1 sec is 1/31,556,925.9747 of the length of the tropical year for 1900. In 1967 the second was redefined to be 9,192,631,770 periods of vibration of the radiation emitted at a specific wavelength by an atom of cesium - 133." "Second," The Columbia Encyclopedia, 6th ed.

The candela is the luminous intensity, in a given direction, of a source that emits monochromatic radiation of frequency $540\times10^{12}\,Hz$ and that has a radiant intensity in that direction of $1/683$ watt per steradian.

Quantum Measurements: Because the MKS system of measurements is most practical for everyday observations, it occurs frequently as the basic system of measurements throughout this book unless otherwise stated. As already mentioned, the Aether Physics Model produces yet another system of measurements, devised so that all measurements base on the quantum length, quantum frequency, quantum masses, quantum charges, and the spherical constant.

Quantum Measurements in APM

The quantum length is the Compton wavelength[18] and is equal to $2.426310238\times10^{-12}\text{m}$ [19]. The symbol for the quantum length is lambda sub-C (λ_C).

Because nearly all human-scale energy interactions at the subatomic level take place via the electron, the quantum mass is usually the mass of the electron and is equal to $9.1093826\times10^{-31}\text{kg}$ [20]. The symbol for the quantum mass is m sub-e (m_e). When transactions occur with the proton, neutron or Aether, the symbol for the quantum mass is m sub-p, m sub-n, or m sub-a respectively (m_p, m_n, m_a). Consult Appendix I for the mass values of the proton, neutron, and Aether.

The quantum frequency, symbol F sub-q (F_q), is equal to the speed of light divided by the quantum length and is $1.23558998\times10^{20}\text{Hz}$. The reciprocal of the quantum frequency is the quantum time (symbol T sub-q, T_q).

The quantum charges are the electrostatic charge (elementary charge squared) and electromagnetic charge. The electrostatic charge notates as e^2 and is equal to $2.566969633\times10^{-38}\text{coul}^2$. The electromagnetic charges calculate from onn angular momentum and are equal to angular momentum times the conductance constant of the Aether. The values are shown later in this book and are written as $e_{emax}{}^2$, $e_{pmax}{}^2$, $e_{nmax}{}^2$, and $e_a{}^2$ for the electron,

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[18] "The Compton wavelength of any particle is given by the relationship, λ0 = h / m0 c, where λ0 is the Compton wavelength, h is Planck's constant, m0 is the rest mass of the particle, and c is the velocity of light." Van Nostrond Company, Inc., Van Nostrand's Scientific Encyclopedia (Princeton: Van Nostrand, 1968) 395.

[19] http://physics.nist.gov/cgi-bin/cuu/Value?ecomwl|search_for=compton+wavelength

[20] http://physics.nist.gov/cgi-bin/cuu/Value?me|search_for=mass+electron

proton, neutron, and Aether, respectively.

Units such as temperature and light intensity base upon dimensions. For example, the unit for temperature is equivalent to the Sievert in the MKS system, and one degree Kelvin is equal to 286.966 Sievert.

Because this new system rests on the Compton wavelength (quantum length), mass of the onta, and quantum frequency, we could refer to it as the system of quantum measurements.

Units of Dimensions

The Aether Physics Model distinguishes between units of measurement and units of dimensions. Nearly all of the units of dimensions in the Aether Physics Model are four letter variables that suggest their unit function. For example, current is denoted as *curr*, potential is *potn*, and resistance is *resn*.

Ohm's law written in Aether Physics Model units of dimensions is:

$$potn = curr \cdot resn \tag{1.1}$$

The quantum measurements and quantum units can also serve as quantum constants. (The units from other systems of measurement are also constants, but they are not quantum constants). Two common quantum constants already in wide use are the quantum velocity and quantum angular momentum. The quantum velocity is the speed of light and notates as the variable c. The quantum electron angular momentum is the Planck constant[21] and notates as h.

Units of dimension build from quantum measurements. For example, the unit of potential (potn) is a unit of dimension made up of quantum measurement:

$$potn = \frac{m_e \cdot \lambda_C{}^2 \cdot F_q{}^2}{e_{emax}{}^2} \tag{1.2}$$

In the case of velocity, when the APM unit of dimension for velocity is used (velc) it can also be substituted with c.

$$velc = \lambda_C \cdot F_q = c \tag{1.3}$$

Another exception to the four-letter rule is the quantum unit for energy. The Tibetan word "tshankha" means "energy with force and power." Tshankha ceremoniously represents energy in the Aether Physics Model, as the energy of stable onta has a sacred nature to it.

[21] "The first direct measurement of the quantum of action was obtained by J. Franck and G. Hertz by liberating quantities of light through electronic impulses." Where Is Science Going? James Murphy, Max Planck (New York, W.W. Norton & Company Inc., 1932) 59-60

$$enrg = m_e \cdot \lambda_C{}^2 \cdot F_q{}^2 = tshankha \tag{1.4}$$

also:

$$tshankha = h \cdot F_q \tag{1.5}$$

Since the electron quantifies as its angular momentum, tshankha is the angular momentum of the electron replicating (perpetuating) each quantum moment. Tshankha is thus the amount of energy expended each quantum moment by the Aether to keep "alive" one electron. Considering the number of electrons there are in the Universe, the Aether is indeed quite powerful and forceful to keep the spin of all onta perfectly consistent throughout all space and all time. Tshankha is also a reminder that the concepts of space and time as components of the physical world are highly developed in the Tibetan Buddhist literature.

In the Standard Model, where variables such as m (for mass) and E (for energy) are used, the variables have dimensions but no values. As such, $E = mc^2$ is not a true equation, rather it is an expression (or formula). If E and m had inherent values, as does the constant c, then E would equal a single unit of energy and m would equal a single unit of mass.

$$\begin{aligned} & E = mc^2 \\ & joule = kg \cdot 8.988 \times 10^{16} \frac{m^2}{sec^2} \\ & \frac{joule}{kg \cdot \frac{m^2}{sec^2}} = 8.988 \times 10^{16} \\ & 1 \neq 8.988 \times 10^{16} \end{aligned} \tag{1.6}$$

E is not mathematically equal to mc^2, which in turn means that the "equation" so often attributed to Einstein, that is $E = mc^2$, is not a true equality. In the Aether Physics Model, constants appear in place of variables. A valid equation describing a unit concerning quantum physics would also appear in terms of quantum measurements. For example:

$$\begin{aligned} & E \neq mc^2 \\ & \text{but} \\ & tshankha = m_e \cdot \lambda_C{}^2 \cdot F_q{}^2 \end{aligned} \tag{1.7}$$

In the APM, all quantum units have a quantum measurement representation.

Quantum Constants

As previously mentioned, all quantum measurements and quantum units in the Aether Physics Model are also constants. Most essential constants in

the Aether Physics Model already exist in Classical physics[22].

Coulomb's constant (k_C), the gravitational constant (G), the speed of light (c), permeability of free space (μ_0), permittivity of free space (ε_0), Planck's constant (h), fine structure constant of the electron (α), and the Compton wavelength (λ_C) retain the same values, dimensions, and nomenclature as in the Standard Model. The values and dimensions for each of these constants appear in the Appendix.

New constants, based on the known constants of the Standard Model, are identified, their purpose defined, and their utility revealed (page 120). New constants and quantum units also appear in the Appendix.

One important new constant from the Aether Physics Model is the conductance of the Aether (page 161), which is essential for calculating and understanding the nature of strong charge.

There are many important new constants, new equations, and new understandings provided by the Aether Physics Model. Taken as a whole, these physics additions result in a new foundational paradigm differing significantly from several Standard Model paradigms.

We remind the reader that the Aether Physics Model as presented in this book is no more complete than the Standard Model. The value of the Aether Physics Model, however, lies in the fact that its paradigm begins with a firm foundation of quantum structural existence and develops in complexity toward the macro structural existence with which we are familiar. The APM also quantifies the metaphysical pre-existence of the physical world and the nature of consciousness. The Standard Model, on the other hand, successfully discovered subatomic existence, but incorrectly concluded that collision effects and forces were elementary particles.

Therefore, we move forward with the understanding that the Aether Physics Model is a fresh beginning, based on a logical framework, which in turn derives from empirical data. We pursue the Aether Physics Model, not because it is the answer to all our questions, but because it leads us to answers regarding quantum structure more readily than the Standard Model with its discontinuous sub-models.

[22] "Classical physics includes the traditional branches and topics that were recognized and fairly well developed before the beginning of the 20th century; mechanics, sound, light, heat, and electricity and magnetism." "Physics," The Columbia Encyclopedia, 6th ed.

Chapter 2

ONTOLOGICAL FOUNDATION

Ontology defines as, "the branch of metaphysics that deals with the nature of being[23]." Physics defines as, "The science of matter and energy and of interactions between the two[23]." Physics is the study of mechanics and until now provided little insight into structure; however, the Aether Physics Model reveals physical structure and that its existence has a non-material cause. The APM reveals a true ontology based upon physical data.

Scientists claim that their physics models predict the data, a recurrent theme throughout the Standard Model and Special Relativity Theory. However, the data is the result of the truth of existence, not of the creation of experiments and theory. The experiments *measure* existence; they do not *construct* it. Theories and models merely explain the data. If the theory does not appeal to common sense, then what prevents us from replacing it with a better theory that does? The Aether Physics Model *is* that better theory.

Scientists claim the Standard Model is convincing despite the fact that the model itself defies common sense when explaining quantum structure. There is no attempt to correct the logic of Standard Model structural theories, as the underlying physics assumptions will not allow it. Instead of finding better explanations for quantum structure, we hear the only important factor is a useable result with regard to quantum mechanics.

The Standard Model of physics lists the elementary particles as quarks, leptons, and force carrier particles[24]. Quarks seem to appear to scientists when two stable protons or neutrons slam together. The protons and neutrons break apart with the same behavior each time, and the resulting pattern of debris results in what physicists call quarks. The quarks have a

[23] The American Heritage® Dictionary of the English Language, Fourth Edition copyright ©2000 by Houghton Mifflin Company. Updated in 2003. Published by Houghton Mifflin Company.

[24] "…This evidence allowed scientists to develop the Standard Model theory of matter, which states that all matter is made up of combinations of six quarks and six leptons that interact with three types of force particles." "Taylor, Richard E.," The Columbia Encyclopedia, 6th ed.

life span of about 10^{-12} second and an isolated quark has never been found[25]. Protons have a "half life" of 10^{32} years or more[26]. Is it likely that such extremely short-lived quarks produce extremely long-lived protons?

If neutrons are made of quarks, then what about observations of neutrons decaying into protons and electrons[27] and protons and electrons binding to produce neutrons[28]? Likewise, there are the force carrier "particles." Physicists speak of gluons[29] as though they were real particles[30], but what evidence is there for a gluon particle? Does it really make sense for force to manifest as a particle?

Quantum Theory[31] (Quantum Mechanics) examines the structure and behavior of atoms and molecules. The Heisenberg Uncertainty Principle[32] states that subatomic particles only exist as probability functions. Wave-particle duality theory (complementarity principle[33]) states that subatomic particles can behave like both particles and waves. Einstein's $E = mc^2$ has been interpreted as stating the dimension of mass and the unit of energy are equivalent.

Of course, in recognition of the irrational nature of many Standard Model

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[25] "Quarks appear to always be found in pairs or triplets with other quarks and antiquarks—an isolated quark has never been found." "Elementary Particles," The Columbia Encyclopedia, 6th ed.

[26] Barry Parker, Einstein's Dream: The Search for a Unified Theory of the Universe (New York: Plenum Press, 1986) 257-8.

[27] "In beta decay a neutron within the nucleus changes to a proton, in the process emitting an electron and an antineutrino" "Radioactivity," The Columbia Encyclopedia, 6th ed.

[28] "Other, less common, types of radioactivity are electron capture (capture of one of the orbiting atomic electrons by the unstable nucleus) and positron emission—both forms of beta decay and both resulting in the change of a proton to a neutron within the nucleus—an internal conversion…" "Radioactivity," The Columbia Encyclopedia, 6th ed.

[29] Definition: Gluon - A hypothetical massless, neutral elementary particle believed to mediate the strong interaction that binds quarks together.

[30] "Gluons are massless, travel at the speed of light, and possess a property called color. Analogous to electric charge in charged particles, color is of three varieties, arbitrarily designated as red, blue, and yellow, and—analogous to positive and negative charges—three anticolor varieties. Quarks change their color as they emit and absorb gluons, and the exchange of gluons maintains proper quark color balance." "Gluon," The Columbia Encyclopedia, 6th ed.

[31] "Modern physical theory concerned with the emission and absorption of energy by matter and with the motion of material particles; the quantum theory and the theory of relativity together form the theoretical basis of modern physics." "Quantum Theory," The Columbia Encyclopedia, 6th ed.

[32] "…on the scale of atoms and elementary particles the effect of the uncertainty principle is very important. Because of the uncertainties existing at this level, a picture of the submicroscopic world emerges as one of statistical probabilities rather than measurable certainties." "Uncertainty Principle," The Columbia Encyclopedia, 6th ed.

[33] COMPLEMENTARITY PRINCIPLE - physical principle enunciated by Niels Bohr in 1928 stating that certain physical concepts are complementary. If two concepts are complementary, an experiment that clearly illustrates one concept will obscure the other complementary one. For example, an experiment that illustrates the particle properties of light will not show any of the wave properties of light. This principle also implies that only certain kinds of information can be gained in a particular experiment. Some other information that is equally important cannot be measured simultaneously and is lost. "Complementarity Principle," The Columbia Encyclopedia, 6th ed.

principles, any respectable physicist will tell you not to take Standard Model physics concepts literally with regard to quantum structure. We hear that physics models are merely abstract concepts of a poorly understood topic.

Modern physics ignores any hint of a non-material, creating force for the Universe; it too closely resembles Deity as described in many world religions. Yet modern physics invents hypothetical particles with color, flavor, up down characteristics, and gluons, that may or may not exist due to probabilities. It is as though the Standard Model exists to deny the Universe has a Creator, only to spread belief in its own myths.

As we entered the 21st century, our measurement equipment and the materials we worked with had reached a very high level of sophistication. We now know the constants of the subatomic realm to a much greater degree of accuracy than did the brilliant minds of the 19th and 20th centuries. Beginning with a fresh look at the precise values and dimensions of the quantum realm, the Aether Physics Model gives the world a real quantum structural physics, and thankfully, a real physics based on a real non-material existence, which some might call God.

It is not enough to point to the weaknesses and inconsistencies of an established or a proposed theory. A convincing argument requires the enumeration not only of the questioned theory's weaknesses but also a better theory to take its place.

And therein rests the general purpose of this book. Presented are the weaknesses and inconsistencies of the Standard Model with regard to quantum structures as well as a better theory to take its place. This better theory, however, is not necessarily new. For thousands of years prior to Albert Einstein, it was widely accepted that the physical Universe constructs from the existence of Aether in one manifestation or another.

Albert Einstein did not disprove, nor did he *attempt* to disprove, the existence of the Aether. In fact, on May 5, 1920 at the University of Leyden[34], Einstein gave a lecture in which he defended the existence of Aether.

What Albert Einstein set out to do in his earlier work was to explain the observed physical phenomena without invoking the Aether. Einstein found limited success, but he was not able to develop a Unified Force Theory or Grand Unified Theory based on his Relativity theories. This was because the forces are inherent to the structure of existence, whereas the Relativity theories could only explain the mechanics.

Einstein was successful enough to advance science to its present condition,

[34] Michel Janssen, Robert Schulmann, József Illy, Christoph Lehner, and Diana Kormos Buchwald, THE COLLECTED PAPERS OF Albert Einstein VOLUME 7, THE BERLIN YEARS: WRITINGS , 1918 – 1921 (Princeton University Press, 2002) 305–309; 321

but with today's developments in nanotechnology and interplanetary and interstellar explorations, we are in desperate need of a more accurate description of quantum structure. As it turns out, this more accurate theory of quantum structure once again invokes the existence of the Aether.

The Aether

The concept of the Aether was dominant in the physics theories from ancient Greece and India until the late 19th and early 20th centuries. The concept of the Aether took many different forms. Frustrated because no convincing evidence of the existence of Aether was emerging, Albert Einstein developed a new approach based on his now famous $E = mc^2$ expression. Mr. Einstein did not totally give up on the Aether, but he did usher in a new physics that excluded the Aether from science[35].

Some early theories of the Aether presupposed a stationary particulate medium. Light seemed to travel as a wave in the Aether medium much as water ripples travel on the surface of water. When Michelson and Morley conducted an experiment to identify the particulate medium as absolute space-time, resulting in Aether drifting through the Earth as the Earth moved through space, they found no overwhelming evidence for the magnitude of Aether drift they expected. However, they did measure an Aether drift. Dayton Miller later conducted extensive tests that verified an Aether drift relative to the Earth at about ten kilometers per second[36]. The results indicated that if Aether exists, it must drag relative to the Earth[37], which Augustin Fresnel also posited[65]. Since the prevailing understanding did not allow Aether to drag along with the Earth, many touted this as evidence against the existence of the Aether. This prejudice toward a dragging Aether also caused many to proclaim the erroneous assumption that the Michelson-Morley experiments showed absolutely no Aether drift.

With the Aether Physics Model, the existence of Aether is an essential aspect for explaining the phenomena within the Universe. Now that we have exact measurements of certain constants, we can deduce that the Aether is not in the form of a physically detectable particle, but in the form of a

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[35] "However, all attempts to demonstrate its [Aether's] existence, most notably the Michelson-Morley experiment of 1887, produced negative results and stimulated a vigorous debate among physicists that was not ended until the special theory of relativity, proposed by Albert Einstein in 1905, became accepted. The theory of relativity eliminated the need for a light-transmitting medium, so that today the term ether is used only in a historical context." "Ether, in Physics and Astronomy," The Columbia Encyclopedia , 6th ed.

[36] Dayton C. Miller, Science, New Series, Vol. 63, No. 1635 (Apr. 30, 1926), 433-443 It is also noted in an article by Robert S. Shankland, Science, New Series, Vol. 176, No. 4035 (May 12, 1972), 652-653 that at the strong encouragement of Albert Einstein, the Miller data was re-examined posthumously and judged to be questionable due to the claim that Miller's results correlated with the temperature gradient across the interferometer table. For all of Miller's extensive experience, it seems highly suspect that Miller did not notice what should have been an obvious flaw in the results, were it true.

[37] "The outcome of the Michelson - Morley experiment would, therefore, suggest that the ether is dragged along with the earth, as far as the immediate neighborhood of the earth is concerned." Introduction to the Theory of Relativity Peter Gabriel Bergmann (New York, Prentice Hall Inc., 1947) 27

non-material Aether unit of 2-spin rotating magnetic field. A quantum Aether unit has the precise value equal to Coulomb's constant times $16\pi^2$.

$$A_u = rmfd = k_C \cdot 16\pi^2 \tag{2.1}$$

The rotating magnetic field concept of the Aether presented in this book is not much different from John Bernoulli's "whirlpool Aether" concept:

John Bernoulli's Whirlpool Aether

All space, according to the young Bernoulli, is permeated by a fluid Aether, containing an immense number of excessively small whirlpools. The elasticity which the Aether appears to possess, and in virtue of which it is able to transmit vibrations, is really due to the presence of these whirlpools; for, owing to centrifugal force, each whirlpool is continually striving to dilate, and so presses against the neighboring whirlpools[38].

The Aether has a non-material nature revealed through Coulomb's constant, the gravitational constant, the speed of light, the permeability constant, and the permittivity constant. The newly defined and important conductance constant of the Aether relates directly to the electromagnetism of onta, as well as to consciousness.

As for evidence proving the existence of the Aether, it does exist. Anybody can do these two simple experiments to see visual proof of the Aether. The first experiment requires a magnet and cathode ray tube. The cathode ray tube could be your computer monitor, TV, or oscilloscope screen. Just make sure your cathode ray tube has a degaussing feature before doing this experiment, or you may permanently disfigure your viewing screen.

Place the magnet against the cathode ray tube with the north or south pole facing the screen. You will notice a pattern seemingly caused by the magnetic flux of the magnet as it reorganizes the electron beams. Once the magnet is flush against the screen, twist it back and forth. You will notice that the pattern on the screen does not change. Had the magnet been the source of the magnetic flux, the pattern would have changed since the magnetic flux would link to the molecules and atoms of the magnet. However, the magnetic flux arises from the Aether and thus exists relative to the Aether. Twisting the magnet will not affect the magnetic flux of the

[38] Sir Edmund Whittaker A History of the Theories of Aether and Electricity; The Classical Theories (London; New York, American Institute of Physics, 1987) 95-96

Aether. This experiment will work regardless of the shape of the magnet.

The same experiment works with ferrofluid. Ferrofluid is a liquid substance that reacts to a magnetic field. Position a magnet below a dish of ferrofluid and twist the magnet back and forth, as in the above experiment. The magnetic flux will not move as observed by the ferrofluid not moving. Once again, the magnetic flux associated with the magnet is coming from the Aether and not from the magnet.

In the Michelson-Morley experiments, the Aether follows along with the matter of the Earth and the atmosphere. The Aether is not a wind that blows freely through matter, except as matter becomes less dense. This is contrary to the expectations of scientists in the 1800s. In addition, Aether gives form to matter, but matter also occupies and manipulates Aether. The situation is a bit more complicated than an assumed fixed Aether with an independently existing matter.

Ferrofluid in presence of magnetic field.

> An important early prediction of Einstein's general relativity was the advance of the perihelion of Mercury's orbit, whose measurement provided one of the classical tests of Einstein's theory. The advance of the orbital point-of-closest-approach also applies to a binary pulsar system and to an Earth-orbiting satellite. General relativity also predicts that the rotation of a body like Earth will drag the local inertial frames of reference around it, which will affect the orbit of a satellite[39].

"Frame dragging" is another euphemism of the Standard Model intended to acknowledge the properties of Aether, but without calling it Aether. The frame dragging of General Relativity theory is tantamount to the notion of Aether moving with matter.

Einstein's Aether

In the previous section, we provided an experiment for proving the existence of the Aether using a permanent magnet and a CRT. Although cathode ray tubes did not exist in the late 1800s, Albert Einstein wrote a paper at the age of 16, which essentially made the same observations about magnetic fields and Aether. In The Golden Age of Theoretical Physics[40], Jagdish Mehra translates Albert Einstein's first paper from German. We provide the full text of the paper as it supports and relates to the Aether Physics Model.

[39] Letters to Nature, Nature 431, 958 - 960 (21 October 2004); doi:10.1038/nature03007

[40] Jagdish Mehra, The Golden Age of Theoretical Physics (March 2001, World Scientific Publishing Company) pp 9-10

Concerning the Investigation of the State of Aether in Magnetic Fields: by Albert Einstein

The following lines are the first modest expression of some simple thoughts on this difficult subject. With much hesitation I am compressing them into an essay which looks more like a program than a paper. Since I completely lacked the materials to penetrate the subject more deeply than was permitted by reflection alone, I ask that this circumstance should not be ascribed to me as superficiality. I hope the indulgence of the interested reader will correspond to the humble feelings with which I offer him these lines.

When the electric current comes into being, it immediately sets the surrounding aether in some kind of instantaneous motion, the nature of which has still not been exactly determined. In spite of the continuation of the cause of this motion, namely the electric current, the motion ceases, but the aether remains in a potential state and produces a magnetic field. That the magnetic field is a potential state [of the aether] is shown by the [existence of a] permanent magnet, since the principle of conservation of energy excludes the possibility of a state of motion in this case. The motion of the aether, which is caused by an electric current, will continue until the acting [electro-] motive forces are compensated by the equivalent passive forces which arise from the deformation caused by the motion of the aether itself.

The marvellous experiments of Hertz have most ingeniously illuminated the dynamic nature of these phenomena — the propagation in space, as well as the qualitative identity of these motions with light and heat. I believe that for the understanding of electromagnetic phenomena it is important also to undertake a comprehensive experimental investigation of the potential states of the aether in magnetic fields of all kinds — or, in other words, to measure the elastic deformations and the acting deforming forces.

Every elastic change of the aether at any (free) point in a given direction should be determinable from the change which the velocity of an aether wave undergoes at this point in that direction. The velocity of a wave is proportional to the square root of the elastic forces which cause [its] propagation, and inversely proportional to the mass of the aether moved by these forces. However, since the changes of density caused by the elastic deformations are generally insignificant, they may probably be neglected in this case also. It could therefore be said with good approximation: The square root of the ratio of the change of velocity of propagation (wavelength) is equal to the ratio of the change of the elastic force.

I dare not decide as to which type of aether waves, whether light or electro-dynamic, and which method of measuring the wavelength is most appropriate for studying the magnetic field; in principle, after all, this makes no difference.

If a change of wavelength in the magnetic field can be detected at all in any given direction, then the question can be experimentally decided whether only the component of the elastic state in the direction of the propagation of the wave influences the velocity of propagation, or the components perpendicular to it also do; since it is known a priori that in a uniform magnetic field, whether it is cylindrical or pyramidal in form, the elastic states at a point perpendicular to the direction of the lines of force are completely homogeneous, but different in the direction of the lines of force. Therefore if one lets waves propagate

that are polarized perpendicularly to the direction of the lines of force, then the direction of the plane of oscillation would be important for the velocity of propagation — that is if the component of the elastic force perpendicular to the propagation of a wave at all influences the velocity of propagation. However, this probably might not be the case, although the phenomenon of double diffraction seems to indicate this.

Thus after the question has been answered as to how the three components of elasticity affect the velocity of an aether wave, one can proceed to the study of the magnetic field. In order to understand properly the state of the aether in it [the magnetic field], three cases ought to be distinguished:

1. The lines of force come together at the North pole in the shape of a pyramid.

2. The lines of force come together at the South pole in the shape of a pyramid.

3. The lines of force are parallel.

In these cases the velocity of propagation of a wave in the direction of the lines of force and perpendicular to them has to be examined. There is no doubt that the elastic deformations as well as the cause of their origin will be determined [by these experiments], provided sufficiently accurate instruments to measure the wavelength can be constructed.

The most interesting, but also the most difficult, task would be the direct experimental study of the magnetic field which arises around an electric current, because the investigation of the elastic state of the aether in this case would allow us to obtain a glimpse of the mysterious nature of the electric current. This analogy also permits us to draw definite conclusions concerning the state of the aether in the magnetic field which surrounds the electric current, provided of course the experiments mentioned above yield any result.

I believe that the quantitative researches on the absolute magnitudes of the density and the elastic force of the aether can only begin if qualitative results exist that are connected with established ideas. Let me add one more thing. If the wavelength does not turn out to be proportional to $\sqrt{A+k}$ [sic], then the reason (for that) has to be looked for in the change of density of the moving aether caused by the elastic deformations; here A is the elastic aether force, a priori a constant which we have to determine empirically, and k the (variable) strength of the magnetic field which, of course, is proportional to the elastic forces in question that are produced.

Above all it must be demonstrated that there exists a passive resistance to the electric current for the production of the magnetic field, that is proportional to the length of the path of the current and independent of the cross section and the material of the conductor.

Dynamic Space

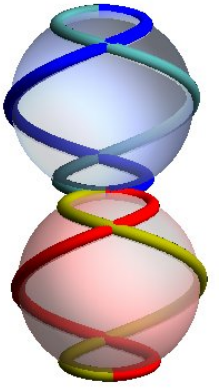
Three axes of length in three-dimensional coordinate systems generally represent the concept of space. This implies that space is equal to volume. And for general purposes, if we talk about a room with space, we are indeed only talking about volume.

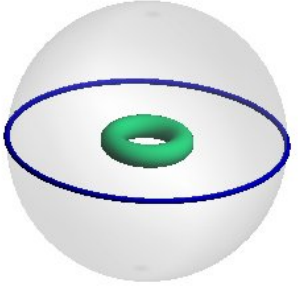
In the Aether Physics Model, space-time is more than just the three dimensions of length and one dimension of time. Space is united with time in such a way that the two are inseparable, producing a single unit called double cardioid (dcrd). However, the coordinate systems still in use today only include dimensions of length. We need a coordinate system that includes both space *and* time. Further, whereas perception of space-time through our bodies' senses gives the appearance of just one dimension of linear time, linear time is an illusion. In reality, the time dimensions of Aether are actually frequency dimensions, and there are two of them. Together these two dimensions of frequency produce a spherical unit of resonance. While in reality the quantum Universe has the qualities of space-resonance, we perceive the physical, macro Universe with the qualities of space-time.

Another intriguing notion of Aether is that space and resonance integrate through a shared geometry. In other words, space and resonance are the same entity but viewed from two perspectives, which are orthogonal to each other.

Geometric Structure of Aether

Non-material Aether having geometry might seem a bit strange. However, this is exactly what empirical data suggests. In fact, after one has reviewed the Aether Physics Model in totality, it is not possible to think of the Aether without geometry.





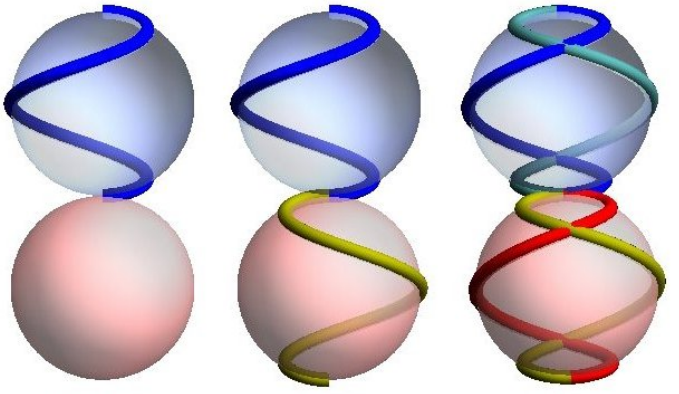
The geometrical constant of the Aether induces to be $16\pi^2$, translating to a geometrical shape of a tubular loxodrome[41] distributed over two adjacent spheres. Further induced is that the spheres have electrostatic polarity, the whole structure has magnetic polarity, and the spin directions have gravitational polarity.

One fourth of the total loxodrome surrounding both spheres is a tube with a surface constant of $4\pi^2$, the toroid constant. Because toroids have two radii, the small radius and large radius, they can have varying radii lengths but still have the same surface area. The toroids in the above left image have different radii, but identical surface areas. This is why all onta share the same quantum surface area as the Compton wavelength squared. It is because all onta have the same surface area that we can graphically represent them as twin tubular loxodromes (referred to simply as "loxodromes") while making use of the quantum distance squared as their surface area.

[41] Dr. Lester Hulett raises the point that the loxodromes of the Aether unit are not exactly the same as loxodromes on a Mercator map. He suggests they be called something else to clarify the subtle differences in geometry.

The perfectly symmetrical representation only applies to the surface areas and to the electrostatic charges. The mass, distributed frequency, and strong charge dimensions are not symmetrical in a given Aether unit. The unequal distributions of quantum distributed frequency affect the general form of the physical Universe and give us shapes like flowers, butterflies, tree branching, leaf patterns, snail shells, skeletal structures, body organ composition, and every other pattern that arises from growth processes. The unequal mass division reflects in the observed difference between electron and proton masses and their proportional strong charges.

The toroid constant $\left(4\pi^2\right)$ represents the surface geometry of ½-spin onta. The electron and proton are examples of ½-spin[42] onta. Half of the double loxodrome has the geometrical constant of $8\pi^2$, and is either the loxodrome around a single sphere or half a loxodrome around two spheres. A full loxodrome represents 1-spin, such as the photon possesses. The full loxodrome around both spheres represents 2-spin, such as the Aether unit and supposed "graviton" possess.



$16\pi^2$ is the square of 4π, which is the spherical constant. The 4π spherical constant is also related to the c^2 (speed of light squared) constant and describes the c^2 geometrical qualities (page 156). The mathematical function of the loxodrome path over the spheres is:

$$f(\theta) = \pi \sin\frac{\theta}{2} \tag{2.2}$$

All physical existence ultimately derives its geometry from the Aether. The geometry, as shown in the images above, represents the *available spin positions* for the angular momentum to reside in the Aether unit. The

[42] Wolfgang Pauli was possibly the most influential physicist in the theory of spin. Spin was first discovered in the context of the emission spectrum of alkali metals. In 1924 Pauli introduced what he called a "two-valued quantum degree of freedom" associated with the electron in the outermost shell. This allowed him to formulate the Pauli exclusion principle, stating that no two electrons can share the same quantum numbers. Wikipedia http://en.wikipedia.org/wiki/Spin_(physics)#History

Aether images do not represent some kind of a particle or otherwise solid entity. The color-coding is intended to show that each spin position is a unique "pathway"; the blue path is for the electron, gold is for the positron, aqua is for the anti-proton, and red is for the proton.

It is important to remember that the tubular loxodromes shown in the drawings are accurate only in relation to the surface constant. The surface area of each half-spin loxodrome is always equal to the Compton wavelength squared. However, the small and large electron and proton radii vary in length, and therefore so do the sphere radii. The Aether, being a 2-spin rotating magnetic field, is flexible in this regard and allows for the centrifugal expansion as envisioned by Bernoulli.

The Aether is thus a "field" in which subatomic particles can exist. It is because of this geometry of Aether that it is possible to model the structures of electrons, photons, protons, and neutrons and their interactions.

Further, the Aether includes the dimensions of mass and charge. An enormous force (Gforce) emanating from a non-material Source acts upon the strong charge dimensions giving rise to the Aether.

The Physical Universe

The preceding section is about the non-material Aether. To present the physical Universe in coherent terms, we must understand the non-material "field," or environment, in which physical matter exists. Once we have knowledge of the non-material Aether structure, we can easily produce a mathematically correct and discrete view of the physical world. The reader should understand that the phrase "mathematically correct" in the Aether Physics Model means that not only the values and operators are correct but also the dimensions. In other words, all of the mathematics used in this book reflects real world structures.

At the core of the Aether Physics Model is a mathematically correct Unified Force Theory, the first such theory to exist in modern science. The Unified Force Theory develops from the concept of distributed charge and fine structures of the onta (fine structures are proportions of spherical elementary charge to equivalent spherical strong charge). The strong force is mathematically (since 1950) and experimentally (since 1996) proven to have a charge that complements, but is different from, elementary charge. But, the theory and the experiments that proved the existence of electron strong force were not seen for what they were because of the investment in the pi meson (pion)[150] hypothesis of a strong force carrier. The Casimir equation is the proof that the electron has a strong charge and that it obeys a strong force law.

When examining the Newton gravitational law, Coulomb electrostatic law, and the strong force law, what seemed to be four distinct forces demonstrate to be three different manifestations of the Gforce with three

different dimensions. The Gforce is comparable to the sun and the three aspects of onta (electrostatic charge, electromagnetic charge, and mass) are comparable to three different colors of glass. We see three different forces in the physical world, but they are all manifestations of one Gforce, as three different colors of light emanate through three different colored panes of glass, even though they are manifestations of one light source. This is an example of how force evolves into complexity similar to the way subatomic particles bind to become atoms. The so-called "weak force" is really a proportion of electrostatic charge to electromagnetic charge.

Primary angular momentum explains the structure behind all matter and light interactions, thereby eliminating the mysterious wave-particle duality theory. Primary angular momentum is the primary form of material existence and explains the photoelectric effect, pair production, and Compton Effect in units that directly relate to the electron and photon.

We hypothesize new equations that predict the nuclear binding forces and electron binding energies of all isotopes (page 234). In addition, the preliminary steps toward the discovery of an atomic spectral equation, which predicts the spectra of all isotopes and their ions, becomes apparent. The electron and nuclear binding energy equations and atomic spectra equations are destined to be the new "holy grail" of physics and we have already had significant success with the electron binding energy equation. From these three equations, we will likely develop molecular equations, which can predict the properties of any substance before it is known to exist.

Unified Force Theory

The Unified Force Theory is the foundation upon which the Aether Physics Model rests. The UFT will appear in detail later; however, an introduction to the core concepts follows here.

The Standard Model of physics recognizes only one type of charge, the elementary charge, which has a single dimension of charge. The torsion balance devised by Charles Coulomb is an electrostatic apparatus, which demonstrates elementary charge[43]. Therefore, it is appropriate to identify elementary charge as the carrier of the "electrostatic force," since that is what the torsion balance measures in this instance.

In the Aether Physics Model, we notate all charge as distributed, just as it appears in nature. Charge is not a point, and we ignore its structural characteristics that result from treating it as a point. Charge always appears over the surface of an object, even if the object is a single electron. Therefore, the correct dimensions of charge are charge squared.

[43] Morris H. Shamos, Great Experiments in Physics "Firsthand Accounts from Galileo to Einstein" (New York, Dover Publications Inc., 1987) 62-3

Instead of presenting elementary charge as e, elementary charge should present as e^2.

$$e = 1.602 \times 10^{-19} coul \quad [44] \tag{2.3}$$

$$e^2 = 2.567 \times 10^{-38} coul^2 \tag{2.4}$$

According to the Standard Model, gluons[29] carry the strong force in quarks, and pions[150] carry the strong force in nuclei. In the Aether Physics Model, the strong force carries by strong charge. Strong charge is related to elementary charge, but it has a different geometry, spin and magnitude. Strong charge notates as e_{emax} for the electron, e_{pmax} for the proton, and e_{nmax} for the neutron. But as in the case of elementary charge, strong charge is always distributed. So, for example, electron strong charge would notate as ${e_{emax}}^2$.

The weak interaction is the proportion of the elementary charge to the strong charge. The weak interaction is equal to 8π times the fine structure of the onn. The relationship of the elementary charge, strong charge, and weak interaction for each onn appears as follows where α, p, and n are the fine structures of the electron, proton, and neutron, respectively:

$$\text{Electron onn: } \frac{e^2}{{e_{emax}}^2} = 8\pi\alpha \tag{2.5}$$

$$\text{Proton onn: } \frac{e^2}{{e_{pmax}}^2} = 8\pi p \tag{2.6}$$

$$\text{Neutron onn: } \frac{e^2}{{e_{nmax}}^2} = 8\pi n \tag{2.7}$$

Later we will examine the relative strengths of the forces between the electrostatic charges, strong charges, weak interactions, and masses in order to see how close the calculated forces agree with empirical measurements (page 210).

Primary Angular Momentum

Wave-Particle Duality

Quantum Mechanics states that onta such as electrons, protons, and neutrons can appear as particles of matter or as waves[45].

[44] NIST CODATA Value: elementary charge, May 27, 2004 http://physics.nist.gov/cgi-bin/cuu/Value?e|search_for=elementary+charge

[45] "Quantum mechanics, the final mathematical formulation of the quantum theory, was developed during the 1920s. In 1924, Louis de Broglie proposed that not only do light waves sometimes exhibit particlelike properties, as in the photoelectric effect and atomic spectra, but particles may also exhibit wavelike properties." "Quantum Theory," The Columbia Encyclopedia, 6th ed.

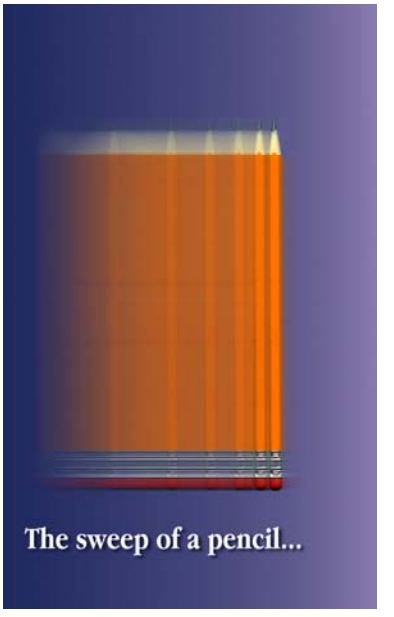
The problem with the wave-particle duality theory is that the dimensions of onta are neither dimension of waves (frequency), nor of solid matter. (The Standard Model does not quantitatively define matter[46].) Since the dimensions of onta are not the dimensions of matter or of waves, the Aether Physics Model does not equate electrons, protons, and neutrons with either solid matter or with waves.

In a 1996 journal article[47], Phil Berardelli reports:

> It turns out that atoms, far from being the tiny billiard balls we commonly see in illustrations, are more like multilayered, discrete, shimmering clouds. Each layer contains proportionately enormous amounts of energy and shimmers - a different but precise electromagnetic frequency. Only when atoms interact with one another in large numbers do they behave as expected in their "classical" state, as scientists call the visible world.

In the Aether Physics Model, these multi-layered clouds are the angular momentum of individual onta. And since these onta are the smallest stable form of material existence, it is proper to view the onta as *primary* angular momentum.

The angular momentum of a two-body system, such as a satellite in orbit around a planet, involves two distinct bodies. Free electrons, protons, and neutrons are single body systems, and yet they have angular momentum[48]. Therefore, consistent with the earlier discussion concerning the relationships among different orders of existence, we can propose that primary angular momentum has a different structure than two-body angular momentum.



When we take the literal dimensions of primary angular momentum we find that there is a mass dimension, there are two length dimensions, and there is a frequency dimension. Expressed in terms of quantum measurements, angular momentum is:

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[46] *Matter.* Something that has mass and exists as a solid, liquid, gas, or plasma. The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

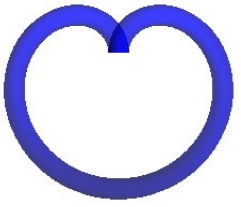
[47] Phil Berardelli, "Physicists Prove That Matter Can Be in Two Places at Once," Insight on the News 15 July 1996: 36, Questia, 19 July 2004 <http://www.questia.com/>.

[48] "We find that photons and also other particles carry an intrinsic angular momentum or spin." Paul Adrian Maurice Dirac, "10 Quantum Mechanics-- Determinism to Probability," The Great Design: Particles, Fields, and Creation (New York: Oxford University Press, 1989) 177.

$$h = m_e \cdot \lambda_C{}^2 \cdot F_q \tag{2.8}$$

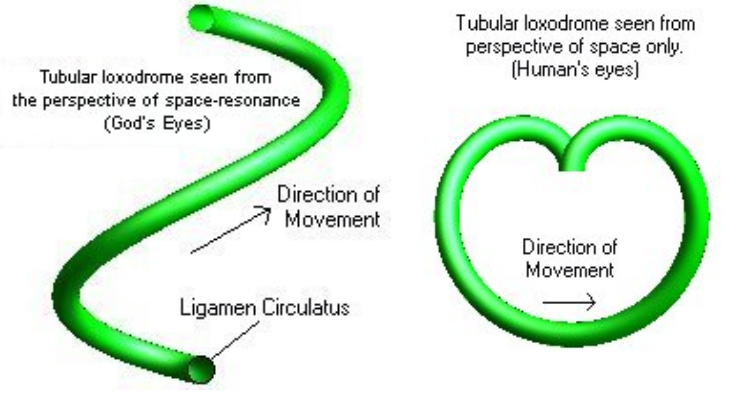
One way to visualize this is to see a line of mass moving perpendicular at a velocity. Take a straight object, like a pencil, and hold it in front of you. The pencil represents a mass times length. In one quick motion, now move the pencil at a velocity perpendicular to its length. The blurred image you see graphically represents the nature of primary angular momentum.

Of course, an electron is not literally a straight line moving sideways. It is necessary to take into account the curvature of the Aether double loxodrome structure. Since the onn mass has to fit in the small circumference of the loxodrome "tube," the line of mass would appear as a circle. *Ligamen circulatus* (LC) names this line of mass. The perpendicular path of the line of mass as it moves sideways also traces out a circular path. The resulting geometry is toroidal. The toroid, however, traces on a sphere and from pole to pole, when viewed in space-resonance coordinates. When viewed in space-time coordinates as with human perception, the shape is actually that of a cardioid, as in the image to the left.



The Aether imparts, and thus accounts for, the spin in the loxodrome structure of the onn. We will view the equations that support the toroid-like geometry of primary angular momentum and its relationship to spin later (page 202).

For now, let us explore the general characteristics of primary angular momentum. Since primary angular momentum is a circumferential line (ligamen circulatus) moving sideways, the onta have only two dimensions of length. The curvature of Aether acts as a mold and imparts geometry to the onta. The ligamen circulatus moves in time, which means that the onn exists as a function of time between one moment and the next moment. Time is consequently a component of onta. In fact, we could not perceive time and space if our bodies and senses were not composed of primary angular momentum. Primary angular momentum is the first-cause of physical perception, intimately related to the distributed frequency (or resonance) of the Aether.


Tubular loxodrome seen from the perspective of space-resonance (God's Eyes)
Direction of Movement
Ligamen Circulatus
Tubular loxodrome seen from perspective of space only. (Human's eyes)
Direction of Movement

Because the ligamen circulatus moves perpendicular to its circumference in order to scan an area (strong charge), the onta are not solid. They more closely resemble a cloud, as does the scanned area of a pencil moving back and forth in our vision. It is the scanning of primary angular momentum, which gives onta the appearances of a wave and particle.

So primary angular momentum explains why onta can appear as particles when we look at their strong charge, and can appear as waves when we look at the moving LC. Yet these are only appearances. The particulate and wave natures of primary angular momentum are illusions having meaning only from our macro perspective. The reality of the onn structure is primary angular momentum and nothing else.

Interestingly, photons can also appear as primary angular momentum, except that they are also exploding outward at the speed of light. A detailed exploration of the photon follows later (page 192).

Zero Point Energy

Finally, we briefly explore the purpose for which the Aether Physics Model was initially developed. We learn how photons constantly propagate from the dark matter that exists throughout the Universe, contributing to the visible Universe's accelerating physical expansion[49]; and then we learn how human beings can tap this natural process in order to realize an unlimited supply of fuelless energy (although this is not recommended, as "free energy" also qualifies as a "pollutant").

The equation for zero point energy also provides us with a mechanism and a clue as to how a "Big Bang" type of event is constantly occurring. As such, the observation of neutrinos can reveal a coherent explanation of the expansion and contraction of the physical Universe. It is interesting to note that out of whatever process generates physical existence, only two forms of stable matter emerge, the electron and proton (aside from anti-matter). If the zero point energy equation (also a form of the strong force law) is correct, then the ZPE equation should be a part of the so-called Big Bang explanation.

However, not too much attention will apply to ZPE in this book. The focus of this book is the foundational theory of quantum structure.

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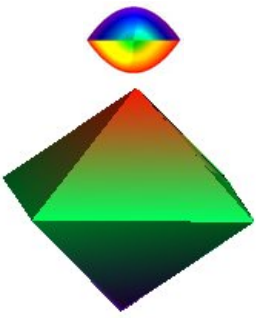
[49] Wendy Freedman, "The Hubble Constant and the Expanding Universe: A Newly Refined Value of [H.Sub.0] the Expansion Rate of the Universe, May Herald a First Step toward a New Era of "Precision" Cosmology," American Scientist Jan.-Feb. 2003, Questia, 27 May 2004 <http://www.questia.com/>.



Chapter 3

GFORCE

Exploring the Gforce

What do you call a force equal to 1.21×10^{44} *newton* that seems to arise out of nowhere and is responsible for the forces that hold the Universe together?

We must first contemplate the nature of force[50]. Generally, we think of force as pressure exerted over an area. If you press your finger on a table, you feel pressure over the area of your finger in contact with the table. The pressure can be either positive or negative. A suction cup applies a negative pressure (vacuum) over an area. Force applies to either pushing or pulling something.

The Gforce operates in the same way. The Gforce both pushes and pulls masses together or apart (matter and anti-matter gravitationally repel each other), and pushes or pulls charge together or apart. Oddly, these are the only two manifestations of force in the Universe. The only manifestation of force is either a push or a pull, relative to mass or charge. Even more surprising, this Gforce is a first cause, as far as the visible Universe is concerned.

What is the Gforce?

Science, it seems, forbids discussion of God. It is as though God were some kind of illusion and that direct empirical observation with human senses is the only mature authority for reality. Yet science is unable to define the origin of gravity and of electromagnetic "fields." In the Standard Model, the so-called "four basic forces" describe as though mediated by particles

[50] FORCE: commonly, a "push" or "pull," more properly defined in physics as a quantity that changes the motion, size, or shape of a body. Force is a vector quantity, having both magnitude and direction. The magnitude of a force is measured in units such as the pound, dyne, and newton, depending upon the system of measurement being used. An unbalanced force acting on a body free to move will change the motion of the body. The quantity of motion of a body is measured by its momentum, the product of its mass and its velocity. According to Newton's second law of motion (see motion), the change in momentum is directly proportional to the applied force. "Force," The Columbia Encyclopedia, 6th ed.

that have the inherent property of push and pull, as though it were possible for a particle to manifest such a characteristic. And indeed, Quantum Field Theory is filled with terms that are intended to hide the fact of non-material existence, such as "conversion constants," "fields," "vacuum," "free space," and others.

What is it that modern science is suppressing, or failing to admit? Is there a rational excuse for not interpreting scientific evidence in favor of the existence of God? What would we see if we analyzed the so-called "conversion constants" of Newton and Coulomb, which are essential to the force laws?

The Gforce is equal to $1.21\times10^{44}\,newton$. That quantity of force extends as: 121,000,000,000,000,000,000,000,000,000,000,000,000,000,000newton or 121 million, billion, billion, billion, billion newton.

That is one enormous force! It is truly the only force in the Universe and it acts directly through the primary angular momentum and charge of each onn. We need to examine this one and only force in order to learn how it directly affects the world we perceive.

The Dimensions chapter describes the properties of reciprocal mass. The inertial mass of the Aether exists reciprocal to the dimension of mass we familiarly apply to visible matter. Reciprocal mass is a relatively unexplored concept in physics and has different properties from familiar mass, just as frequency has different properties from time. In addition to being a more primary order of reality, the non-material nature of Gforce likely relates to the Aether's reciprocal inertial mass.

As we saw in the previous chapter, primary angular momentum is the physical description of the electron, photon, proton, and neutron. Physical strong charge is the result of primary angular momentum spinning within the Aether unit. Essentially, primary angular momentum and physical strong charge describe the same onn, but from orthogonal perspectives.

The Gforce is everywhere in the Universe and is singularly responsible for holding the entire Universe together. Every individual quantum of Aether has the full effect of the Gforce acting through it. This Gforce acts upon the three physical qualities of onta (angular momentum, strong charge, and electrostatic charge). Thus, the quantum Aether units and onta can perform individually or collectively as fields and matter. The results of their interactions are a dynamic Universe.

An all-powerful, all-pervading force, creating, binding, and maintaining the existence of the entire physical Universe could easily be described as the effect of God. Of course, God is ascribed to be so much more than a physical Universe (such as unconditional love, unbounded wisdom, and

unlimited compassion) that the Gforce should more appropriately be called "the Hand of God on the Universe," and not God *per se*.

It is not as though the Gforce is an allegory for God. The Gforce is very real and already fits the description of an all-powerful, all pervading force of the Universe. It comes down to one of just two possibilities. Either there exists a non-material, creative force in the Universe, which some might call God, or such a creator does not exist. If God exists as creator of the Universe, then attributes of God must be present in the physics that describe the Universe. So why should we be surprised when clear evidence for a creative force appears which some might call God?

Gforce in Three Manifestations

Gravity and Charge Attraction-Repulsion

What are the odds that the same Gforce constant could be extracted from both Isaac Newton's constant of universal gravitation and the Coulomb constant of electrostatic attraction-repulsion? There is no record that Charles Coulomb used what we now know as Coulomb's constant in his equations, or even that he was aware of such a constant[51].

Therefore, Coulomb likely was not aware of a constant of proportionality that mediates the force between charges, and he certainly could not have devised his system so that it would resolve to the same unit of Gforce, as does Newton's gravitational constant. Moreover, Newton was not aware of the Compton wavelength or the exact speed of light, so he, too, could not have known about the Gforce.

Yet, it is there, an enormous unit of Gforce, derived from Coulomb's electrostatic constant, from Newton's gravitational constant, and from a newly defined Aether unit constant also known as the rotating magnetic field unit of measurement, or the Aether electromagnetic constant.

These three manifestations of Gforce directly relate to the three force carriers: electrostatic charge, electromagnetic charge, and the mass within primary angular momentum. The Coulomb electrostatic constant is the interaction constant of the Gforce with electrostatic charge. The unit of rotating magnetic field is the interaction constant of Gforce with electromagnetic charge. And the Newton gravitational constant is the interaction constant of the Gforce with mass.

[51] The proportionality of quantity was not proved by Coulomb by means of special experiments, since he takes the forces from the start as a measure of the quantities of the unknown electricities and magnetisms, but not without having previously proved that this assumption can be carried out consistently, by numerous experiments, for example on the division of quantities of electricity between conductors brought in contact with one another. Philipp Lenard, Great Men of Science: A History of Scientific Progress, trans. H. Stafford Hatfield (New York: The Macmillan Company, 1933) 150.

Quantum Measurements

It will repeatedly come to our attention in the Aether Physics Model that there is a quantum length to the Aether, as well as a quantum frequency. The quantum length is equal to the well-known Compton wavelength. The quantum frequency is equal to the speed of light divided by the quantum length. The reciprocal of the quantum frequency will give the quantum time.

The value of the Compton wavelength is:

$$\lambda_C = 2.426 \times 10^{-12} m \tag{3.1}$$

The Aether unit is like an individual piece of real estate in the quantum Universe and it represents a specific space that oscillates at a specific rate between forward and backward time. The specific space produces the volume of $\lambda_C{}^3$. While the structure of the Aether unit is not a cube, it has the same effect as a cube for mathematical purposes (to understand how Aether resolves to cubic appearance see the $4\pi^2$ constant on page 270). As any onn moves between Aether units, it moves one quantum distance (Compton wavelength) along its trajectory.

The speed of light constant is:

$$c = 2.998 \times 10^8 \frac{m}{\text{sec}} \tag{3.2}$$

The speed of light is explained quite simply in the Aether Physics Model as the quantum distance times quantum frequency (or quantum distance per quantum time). Since Aether encapsulates onta, the quantum parameters of Aether limit the speed of onta. The maximum speed at which any onn can move is one quantum distance times the quantum frequency. But for onta to move, the encapsulating Aether must displace the surrounding Aether.

This does not mean that higher frequencies or shorter lengths cannot exist in the Universe. Wave interference patterns can appear as shorter lengths or higher frequencies. However, the production of such apparent lengths and frequencies would require the interference of two or more sources.

The limitation imposed by the speed of light does not apply to the movement of Aether units among themselves if the Aether units vibrate. Therefore, it is quite possible to send faster than light communications by directly modulating Aether units, rather than sending photons through space or electrons through conductors. The Aether units can modulate via the strong force by magnetic pulses – a topic for later discussion.

It may even be possible to modulate a stream of neutrinos to achieve faster than light communications, although it remains to be determined whether

or not neutrino modulation would be practical, even if possible.

The quantum frequency is:

$$\frac{c}{\lambda_C} = F_q \tag{3.3}$$

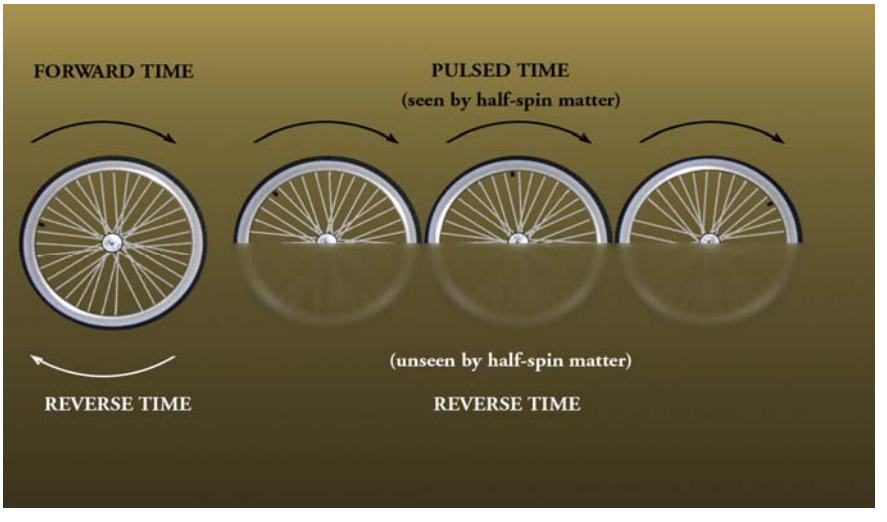
Almost all units in the Aether Physics Model express in terms of frequency, rather than time. Measured time is merely a perception of one of the two time directions. In each quantum moment, an Aether unit is actually moving in the forward time direction and then in the backward time direction, oscillating a full cycle at the quantum frequency. For whatever reason, onta only exist in the forward time direction. Onta do not experience the backward time direction, therefore the larger structures made from onta (planets, animal bodies, plants, etc) also do not experience the backward time direction.

Because onta do not experience the backward time direction, they appear to have a property called ½ spin.

The quantum time is:

$$\frac{\lambda_C}{c} = T_q \tag{3.4}$$

As far as normal quantum structures go, the smallest interval of forward (or backward) time is equal to the quantum time, since quantum time is the reciprocal of quantum frequency.



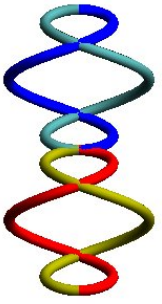
Perception of Linear Time

Due to the ½-spin nature of onta, we do not experience the backward time direction. So time appears to be a succession of quantum, forward time intervals. In "God's Eyes," there is a quantum frequency, which always exists in the present. Through human eyes, since bodies are made of ½-

spin onta, time appears to move from the past toward the future. Thus, linear time is an illusion due to the perception that arises from physical embodiment.

The Pulsed Time graphic on the previous page, depicting forward time, shows consecutive pulses, without blank spaces between pulses. However, the image does convey the general concept that time is a series of forward time half-cycles. To our perception, however, forward time appears to be uniformly linear.

Electromagnetic Structure



Double Loxodrome
rmfd Constant

The Gforce is essential to the construction of the quantum Aether unit, which is also the electromagnetic constant. The Gforce acting on toroidal electromagnetic charge produces the *rmfd* constant, or rotating magnetic field, and it has the geometrical constant of $16\pi^2$. *Rmfd* manifests as a double loxodrome, as seen at left.

In terms of quantum measurements, *rmfd* notates as:

$$rmfd = \frac{m_e \cdot \lambda_C{}^3 \cdot F_q{}^2}{e_{e\max}{}^2} \tag{3.5}$$

Note that the quantum measurements making up the rotating magnetic field unit can factor as a mass to strong charge ratio and a space-resonance constant. The mass to strong charge ratio is the same for all onta and Aether, and the space-resonance constant names "double cardioid" because from the perspective of space-time, the space-resonance constant looks like two adjacent cardioids.

The mass to strong charge ratio for all onta and the Aether is:

$$mchg = 6.508\times10^6 \frac{kg}{coul^2} \tag{3.6}$$

Examples of the mass to strong charge ratio:

$$\frac{m_e}{e_{emax}{}^2} = 6.508\times10^6 \frac{kg}{coul^2} \tag{3.7}$$

$$\frac{m_p}{e_{pmax}{}^2} = 6.508\times10^6 \frac{kg}{coul^2} \tag{3.8}$$

$$\frac{m_n}{e_{nmax}{}^2} = 6.508\times10^6 \frac{kg}{coul^2} \tag{3.9}$$

$$\frac{m_a}{e_a^{\,2}} = 6.508\times10^{6}\,\frac{kg}{coul^2} \tag{3.10}$$

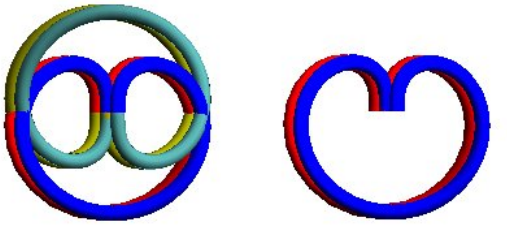
Therefore, the *rmfd* also notates as:

$$rmfd = \frac{m_a \cdot \lambda_C^{\,3} \cdot F_q^{\,2}}{e_a^{\,2}} \tag{3.11}$$

The double cardioid constant is equal to the three dimensions of length times the two dimensions of frequency:

$$dcrd = \lambda_C^{\,3} \cdot F_q^{\,2} \tag{3.12}$$

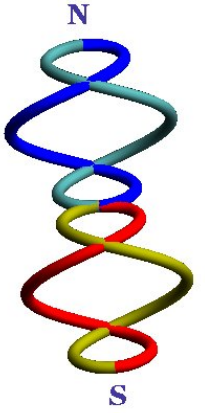
Below is a graphic representation of the double cardioid constant as viewed from nearly half-spin perspective and seeing only normal matter. True half-spin perspective would view straight down and only one cardioid would appear.



With Anti-Matter Without Anti-Matter

Since matter and anti-matter cannot co-exist as separate onta, and because we see from half-spin perspective, the full Aether unit appears to us only in one-fourth its full form. It is essential to understand the double cardioid geometry of Aether units when working with binding force equations.

Looking at the Aether unit from space-resonance, the electromagnetic charge dipole is above and below the cardioid shape as seen at right. What this means is that if you wrap a wire around a nail and place a current through the wire, the magnetic poles will be at the head and tip of the nail. This also means that electrons travel through wires sideways, offering significant insight as to how electrons behave in a wire coil and other electrical structures.



Electromagnetic Dipole

Keep in mind that at the quantum level, onta are only two-dimensional. There is a surface area, but there is no "thing" underneath the surface. There is no solid matter at the quantum level, just cardioid rings of strong charge. It is through these cardioid rings of strong charge that Gforce acts when producing physical strong force.

The cardioid shapes of the quantum Aether unit impart the spin path and structure the ligamen circulatus must take. The area scanned is real, as is the strong charge it produces. However, as far as the string of mass goes, it distributes through the cardioid at different times. It is similar to the pencil moving back and forth in front of our eyes. We perceive the pencil as existing in several places at once, although we know better. Yet, there is only one quantum moment for the ligamen circulatus to spin from pole to pole. In one quantum moment, the ligamen circulatus scans a full spin position of the Aether unit.

The area per strong charge, through which the Gforce manifests, could name as the "stroke" of the Gforce:

$$strk_a = \frac{\lambda_C{}^2}{e_a{}^2} \tag{3.13}$$

Thus, the quantum Aether unit quantifies as:

$$rmfd = strk_a \cdot Gforce \tag{3.14}$$

The Gforce thus pulses in forward and backward time, driving the ligamen circulatus into a spin. The stroke has toroidal geometry since the strong charge has steradian solid angle, therefore the Gforce must have toroidal geometry.

Electrostatic Structure

The electrostatic constant is widely known as Coulomb's constant, which is equal to:

$$k_C = 8.988 \times 10^9 \frac{kg \cdot m^3}{sec^2 \cdot coul^2} \tag{3.15}$$

and can represent as a force acting through surface per charge:

$$k_C = 8.988 \times 10^9 \frac{m^2}{coul^2} newton \tag{3.16}$$

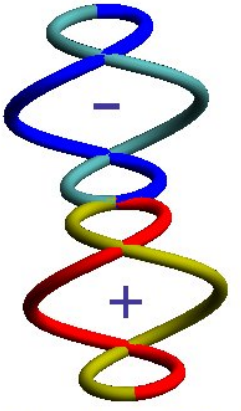
which in turn is equal to:

$$k_C = \frac{strk_a \cdot Gforce}{16\pi^2} \tag{3.17}$$

Note that the geometrical constant $\left(16\pi^2\right)$ divides out the double loxodrome constant of the Gforce times stroke, giving it a solid angle of 1. The solid angle of 1 is spherical, thus Coulomb's constant mediates the forces with regard to spherical electrostatic charge. The electrostatic charge dipoles of the Aether unit are within the spheres around which the electromagnetic charge exists, as shown in the graphic below. Onta,

which exist within an Aether unit, pick up the donated electrostatic charge. The electron and anti-proton pick up the negative electrostatic charge and the proton and positron pick up the positive electrostatic charge.

Distributed frequency is the unit of resonance, which the Gforce causes by reciprocating its inertia back and forth in time. The quantum frequency is the oscillation rate. Thus electrostatic charge, resonance, time, and the curved geometry of the Aether are likely related.

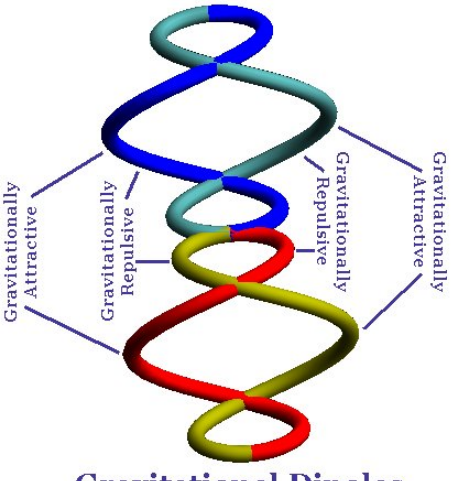


Electrostatic Dipole

Gravitational Structure

We have just examined the dipole structures of electromagnetic and electrostatic charge as caused by the Gforce. Now we will see how the Gforce creates a dipole of a gravitational nature. It is worth noting that the Standard Model does not acknowledge gravitational repulsion, only gravitational attraction.

The Gforce pushes the ligamen circulatus of matter through the Aether unit in one direction, and pushes the LC of anti-matter in the opposite direction around the spherical resonance.



Gravitational Dipoles

Whether onta will attract or repel gravitationally depends upon whether any two are matter or anti-matter. The proton and electron are both matter, so they experience gravitational attraction. Similarly, the anti-proton and positron are both anti-matter and so they experience gravitational attraction. However, the electron is matter and the positron is anti-matter, so they experience gravitational repulsion. The same goes for the proton and anti-proton.

The mechanics of gravity are thus dependent upon spin parity. Both the electron and proton spin in the same direction, and the anti-proton and positron spin in the opposite direction. Remember that onta, whether matter or anti-matter, cannot exist in the backward direction of time. All of the spin positions are unidirectional with regard to time.

Similar to the structure used in the electromagnetic constant and electrostatic constant, the gravitational constant is equal to:

$$G = 6.672 \times 10^{-11} \frac{m^3}{kg \cdot \sec^2} \tag{3.18}$$

and can be represented as:

$$G = 6.672 \times 10^{-11} \frac{m^2}{kg^2} newton \tag{3.19}$$

Once again, we see that force exerts from a surface. This time the surface is a surface of area per distributed mass. Mass is a linear dimension, as opposed to the distributed dimension of charge. Nonetheless, the Gforce still pulses its own reciprocal LC to create the Aether unit causing its mass dimension to scan an area. The mass associated with the Gforce is:

$$m_a = 3.268 \times 10^{15} kg \tag{3.20}$$

Since mass is linear it can only extend a push or a pull, but not both such as charge does. We can call this extension of push or pull "reach." The reach constant is equal to:

$$Rch = \frac{\lambda_C{}^2}{m_a{}^2} \tag{3.21}$$

$$Rch = 5.513 \times 10^{-55} \frac{m^2}{kg^2} \tag{3.22}$$

Therefore, the gravitational constant of the Aether expresses as:

$$G = Rch \cdot Gforce \tag{3.23}$$

The Gforce acts on surface per distributed mass to produce the Newton gravitational constant, which has been empirically determined to a high degree of accuracy[52]. The precise symmetry of the electromagnetic constant, Coulomb's constant and Newton's gravitational constant is astonishing. All base on the same, exact quantum length dimension and Gforce. The Gforce itself is quantum in that it also expresses in quantum measurements:

$$Gforce = m_a \cdot \lambda_C \cdot F_q{}^2 \tag{3.24}$$

The Cause of Existence

The most skeptical of scientists will brush aside the Gforce and blithely state that the Gforce is merely a mathematical aberration. In addition, the same scientists will have no explanation for the existence and structure of the Newton gravitational constant and the Coulomb constant except to say that they are mere constants of proportionality, which only serve the

[52] Arthur L. Robinson, *Science, New Series, Vol. 222, No. 4630.* (Dec. 23, 1983), pp. 1316-1317.

purpose of making the force laws work.

However, an honest view is that the Gforce is no aberration and that it is the cause of Newton's gravitational constant, Coulomb's constant, and the electromagnetic constant, not by chance, but as a matter of grand design. The fact that a very specific Gforce exists not only in the two previously known "constants of proportionality," but also in a third "constant of proportionality," proposed in this treatise to govern the strong force law, is substantial evidence in favor of a higher universal order.

The apparent pulsing nature of the Gforce, as evidenced by the spherical resonance producing the electrostatic charge, reminisces of a heartbeat. Although the Gforce looks nothing like a human life form, it has many of the characteristics associated with a living being. The Gforce is self-dynamic, it gives rise to the fabric of space-resonance, and gives existence to and maintains visible matter.

If we could indulge ourselves for a moment, and accept that Gforce is living, then reflecting on the fact that cells, organs, and the animals and plants they compose are also living, it is reasonable to postulate that the orders of reality in between are also living. In other words, what rationale could there be for life existing at the level of Gforce and everything from the level of cells to more complex levels, and then have Aether, onta, atoms, and molecules not also be alive?

Masaru Emoto has done research on water molecules that suggests water has qualities of a living being[53]. Water is considered by modern science to be nothing but an inert molecule. However, the Aether Physics Model appears to suggest there is no level of existence where life does not also exist. To date, scientists have held a sterile attitude toward life, while harnessing science almost gleefully to such ends as building weaponry of all sorts for the express purpose of destroying life. Now that a deeper and more fulfilling aspect of quantum physics is emerging in the form of the Aether Physics Model, what would prevent us from seriously investigating the living qualities of the Universe at all of its levels? Where would such an endeavor lead us?

The sheer magnitude of the Gforce is beyond human conception, even though its value derives easily and to a good degree of accuracy. The Gforce is non-material in origin and yet it governs physical mechanics. Aside from ignoring the Gforce in physics, there seems no other way to approach it than with gratitude, humility, and awe. For out of the void comes a solitary force that governs the entire physical Universe. Everything that we experience in this world manifests and maintains by the Gforce through the electromagnetic constant, Coulomb's electrostatic constant, and Newton's gravitational constant.

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[53] Masaru Emoto, The Hidden Messages in Water (Beyond Words Publishing, Inc., Hillsboro, OR, 2004)

Genesis[54]

In the beginning God created the heaven and the earth.

And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.

And God said, Let there be light: and there was light.

And God saw the light, that it was good: and God divided the light from the darkness.

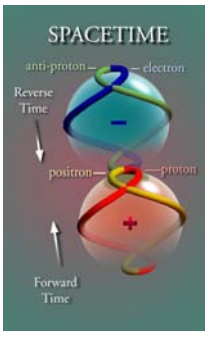
And God called the light Day, and the darkness he called Night. And the evening and the morning were the first day.

Replace heaven with "Aether," and earth with "primary angular momentum."

In the beginning, the Gforce created the Aether and primary angular momentum. The primary angular momentum was without form (dark matter), and void, and darkness was upon the face of the deep (empty space). And the Gforce moved upon the Aether. And the Gforce gave light (primary angular momentum expands on the surface of Aether units to produce photons). The light illuminated the darkness.

Perhaps it is a mere coincidence that the Aether Physics Model sounds similar to the beginning of Genesis. Then again, perhaps it is not.

[54] Genesis, King James Version



Chapter 4

AETHER

Albert Einstein said:

> …there is a weighty argument to be adduced in favour of the ether hypothesis. To deny the ether is ultimately to assume that empty space has no physical qualities whatever. The fundamental facts of mechanics do not harmonize with this view. For the mechanical behavior of a corporeal system hovering freely in empty space depends not only on relative positions (distances) and relative velocities, but also on its state of rotation, which physically may be taken as a characteristic not appertaining to the system itself. In order to be able to look upon the rotation of the system, at least formally, as something real, Newton objectivises space. Since he classes his absolute space together with real things, for him rotation relative to absolute space is also something real.
>
> …inertial resistance opposed to relative acceleration of distant masses presupposes action at a distance; and as the modern physicist does not believe that he may accept this action at a distance, he comes back once more, if he follows Mach, to the ether, which has to serve as a medium for the effects of inertia. But this conception of the ether to which we are led by Mach's way of thinking differs essentially from the ether as conceived by Newton, by Fresnel, and by Lorentz. Mach's ether not only conditions the behaviour of inert masses, but is also conditioned in its state by them.
>
> Mach's idea finds its full development in the ether of the general theory of relativity. According to this theory the metrical qualities of the continuum of space-time differ in the environment of different points of space-time, and are partly conditioned by the matter existing outside of the territory under consideration[55].

The Aether Physics Model produces an Aether hypothesis as seen by

[55] Albert Einstein, Sidelights of Relativity (Courier Dover Publications, 1983) 16-18

Descartes, Newton, Bernoulli, Fresnel, and Lorentz in that it agrees with certain aspects of their observations and hypotheses. Through the unified charge equation, the APM also agrees with Mach in that the Aether acts on matter, and matter in turn acts upon Aether. Moreover, the Aether Physics Model agrees with Einstein in that it also explains General Relativity Theory, though from the perspective of Aether electrostatic charge and the strong charge of matter. We will look into these ideas in detail later in this chapter.

Nikola Tesla[56]:

The technical editor of the New York Herald Tribune's radio section responded thus to an article by Laurence M. Cockaday[57]:

> "I have read the article, and I quite agree with the opinion expressed – that wireless power transmission is impractical with present apparatus. This conclusion will be naturally reached by any one who recognizes the nature of the agent by which the impulses are transmitted in present wireless practice.
>
> "When Dr. Heinrich Hertz undertook his experiments from 1887 to 1889 his object was to demonstrate a theory postulating a medium filling all space, called the ether which was structureless, of inconceivable tenuity and yet solid and possessed of rigidity incomparably greater than that of the hardest steel. He obtained certain results and the whole world acclaimed them as an experimental verification of that cherished theory. But in reality what he observed tended to prove just its fallacy.
>
> "I had maintained for many years before that such a medium as supposed could not exist, and that we must rather accept the view that all space is filled with a gaseous substance. On repeating the Hertz experiments, with much improved and very powerful apparatus, I satisfied myself that what he had observed was nothing else but effects of longitudinal waves in a gaseous medium, that is to say, waves, propagated by alternate compression and expansion. He had observed waves in the ether much of the nature of sound waves in the air.
>
> "Up to 1896, however, I did not succeed in obtaining a positive experimental proof of the existence of such a

[56] TESLA, NIKOLA 1856-1943, American electrician and inventor, b. Croatia (then in Austria-Hungary). He emigrated to the United States in 1884, worked for a short period for Edison, and became a naturalized American citizen (1891). A pioneer in the field of high-voltage electricity, he made many discoveries and inventions of great value to the development of radio transmission and to the field of electricity. These include a system of arc lighting, the Tesla induction motor and system of alternating-current transmission, the Tesla coil, generators of high-frequency currents, a transformer to increase oscillating currents to high potentials, a system of wireless communication, and a system of transmitting electric power without wires. He produced the first power system at Niagara Falls, N.Y. There is a museum dedicated to his work in Belgrade, Yugoslavia. "Tesla, Nikola," The Columbia Encyclopedia, 6th ed.

[57] Lawrence M. Cockaday, New York Herald Tribune, Sept. 22, 1929, pp. 1, 29.

> medium. But in that year I brought out a new form of vacuum tube capable of being charged to any desired potential, and operated it with effective pressures of about 4,000,000 volts. I produced cathodic and other rays of transcending intensity. The effects, according to my view, were due to minute particles of matter carrying enormous electrical charges, which, for want of a better name, I designated as matter not further decomposable. Subsequently those particles were called electrons.[58]
>
> "One of the first striking observations made with my tubes was that a purplish glow for several feet around the end of the tube was formed, and I readily ascertained that it was due to the escape of the charges of the particles as soon as they passed out into the air; for it was only in a nearly perfect vacuum that these charges could be confined to them. The coronal discharge proved that there must be a medium besides air in the space, composed of particles immeasurably smaller than those of air, as otherwise such a discharge would not be possible. On further investigation I found that this gas was so light that a volume equal to that of the earth would weigh only about one-twentieth of a pound.
>
> "The velocity of any sound wave depends on a certain ratio between elasticity and density, and for this ether or universal gas the ratio is 800,000,000,000 times greater than for air. This means that the velocity of the sound waves propagated through the ether is about 300,000 times greater than that of the sound waves in air, which travel at approximately 1,085 feet a second. Consequently the speed in ether is 900,000 x 1,085 feet, or 186,000 miles, and that is the speed of light."

Nikola Tesla observed that electrons transmitted through a near perfect vacuum in his vacuum tubes appeared as corona several feet through the air surrounding the tube. His observation is quite simple. If there is nothing in the tube between the electrode and the glass, then it remains a question how the electrons convey through the vacuum and into the surrounding air. Tesla then deduced that there must be a gas much finer than air molecules through which electrons could travel.

Tesla does not explain how he arrived at the elasticity-density ratio of Aether to air. If he had provided evidence of direct measurement, it would have been a major milestone in support of the Aether theory. Yet even if Tesla back calculated the Aether to air ratio, he did theorize the Aether as "gaseous."

Other researchers have attempted to quantify the existence of the Aether.

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[58] "In 1874 the Irish physicist George Johnstone Stoney (1826-1911) had also suggested the idea of a particle or atom of electricity, and in 1891 he suggested that the unit of negative electricity should be called the electron , which is what it has been called since." Keith J. Laidler, To Light Such a Candle: Chapters in the History of Science and Technology (Oxford: Oxford University Press, 1998) 149.

Around 1644, René Descartes was the first to propose an all-pervading Aether with mechanical properties.

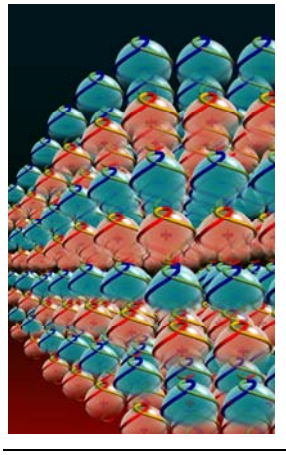
> Descartes assumed that the Aether particles are continually in motion. As however there was no empty space for moving particles to move into, he inferred that they move by taking the places vacated by other Aether particles, which are themselves in motion. Thus, the movement of a single particle of the Aether involved the motion of an entire closed chain of particles; and the motions of these closed chains constituted vortices, which performed important functions in his picture of the cosmos[59].

As such, the Aether was considered to be incredibly solid (it fills all space), but also incredibly fluid. These are the ideal conditions to support waves.

The theory of Aether presented in this book will show a quantum Aether that is simultaneously solid-fluid-gaseous, which looks like tubes, called "spin positions." These spin positions are cardioidal structures curved by spherical distributed frequency. The Aether unit acts like a vessel for containing onta, which are the basis of all matter.

Physical matter views like dust particles suspended in an aqueous solution. The Aether unit provides the space-resonance environment for the onta. Thus when onta appear to move, it is actually Aether moving and carrying the onta with it. Matter never really travels at all. Matter always occupies the same space and time. In actuality, space-time moves relative only to space-time.

As for whether electromagnetism transmits in transverse or longitudinal form, Tesla was correct in that Aether units could oscillate as longitudinal waves. However, this does not preclude Aether from also carrying the electromagnetic effect of the photon as it passes through the Aether units. The Aether could then have a mechanical effect (longitudinal wave) as well as an electromagnetic effect (Hertzian wave).



In the case of the longitudinal wave, the Aether unit itself moves back and forth like a gas molecule. In the case of Hertzian (transverse) waves, photons physically pass through the Aether units. Since longitudinal waves in the Aether are actual Aether displacements, longitudinal waves also have the potential to create unusual effects such as those manifested by John Hutchison in cold-melting aluminum, and by John Keely in molecular

[59] Sir Edmund Whittaker A History of the Theories of Aether and Electricity: The Classical Theories (London; New York, American Institute of Physics, 1987) 6

dissociation of water.

The Shape of "Emptiness"

Aether is a dynamic fabric of space-resonance composed of independent quantum units. Each quantum unit of Aether contains three dimensions of length and two dimensions of frequency (distributed frequency is the unit of resonance). In addition, Aether also contains one dimension of mass, four dimensions of charges (two dimensions of electrostatic charge and two dimensions of electromagnetic charge), and spin. Each of the above named dimensions produce a quantum unit of rotating magnetic field.

The Aether unit itself exists within a greater and yet more primary "space-time" continuum. It is hard to say at this point whether this greater space-time has the same three length and two frequency dimensions as the Aether unit. Greater space-time is not necessarily limited to the space-time dimensions that we perceive in the physical world. Observations of neutrinos reveal evidence of the existence of a greater (or more primary) space-time, since they exist outside of quantum Aether units.

Because each quantum unit of Aether is independent, the Aether unit manipulates just like gaseous matter. As onta bind and unbind, they manipulate physical space-resonance to some degree. This manipulation occurs through Aether unit folding; the Aether units literally flip over to electrostatically and electromagnetically bind with each other. The effect of Aether folding is that Aether condenses where matter is present. Augustin Fresnel observed such an effect:

> There are other points concerning the action of matter upon the ether which are perhaps in a fair way to receive a clearer solution. The observed fact that light travels in water with a speed of about three-fourths of what it has in air, apparently means that the transmitting medium is either more dense or less rigid in water than in air. Fresnel's hypothesis is that its rigidity is the same in the two media. His formula, as developed by Eisenlohr, for the relative motion of ether and matter which it permeates, when the matter is set into motion, assumes, clearly and baldly, that the ether is more dense inside of matter than in free space. The amount of ether occupying a volume of one cubic centimeter will condense to nine-sixteenths of a centimeter on passing into water. It is compressed until its density is nearly double.[60]

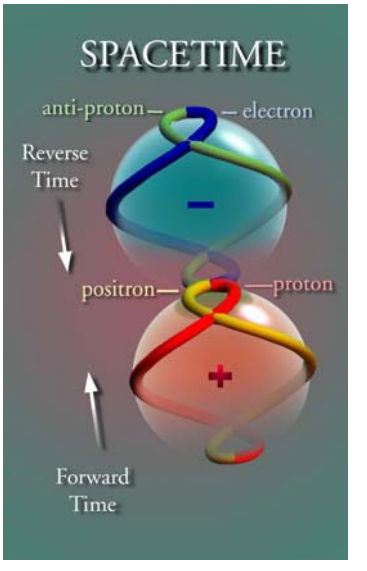
All alternating currents also distort the Aether as the expansion and contraction of electrons occurs. Electrons can expand and contract by changing their toroidal radii. As the smaller electron radius shrinks, the

[60] The Ether, *Science*, Vol. 18, No. 447. (Aug. 28, 1891), pp. 119-122.

larger radius grows, thus conserving the angular momentum. Nevertheless, the Aether radius (related to spherical resonance) changes with the large radius of the electron. Thus as the electron expands and contracts, so does the Aether, making it possible to modulate Aether units directly, just as Tesla proposed.

As demonstrated in the spacetime graphic below, forward time and backward time have different directions within a past-future oscillation. Just as length has two directions, time has two directions. If primary angular momentum could see both time directions, we would not perceive any progress in time, as we would always remain in the present. However, as it is, onta appear to have only half-spin and thus primary angular momentum only sees the forward direction of time.

The four colored tubes in the spacetime image are in the shape of a loxodrome[61] and represent the four possible spin positions available to onta. The artist's representation of an Aether unit is accurate to the extent that each of the four tube sections has the same surface area. However, in actuality the electron tube is considerably different in proportion from the proton tube. Further, the radius of the spheres can expand and contract considerably depending upon which physical processes are occurring. A simple hydrogen atom would be wide with thin tubes, but a deuterium atom would be tight with thick tubes (nearly spherical).



Neutrons would have nearly the same properties as protons, being wide with thin tubes in their free state, and tight with thick tubes (nearly spherical) in their bound state. Thus, the instability of the neutron would seem to occur when the neutron is in its free state, but not in its bound state. The instability is due mostly to the neutron's bound electron magnetic moment spreading over a greater radius.

This would suggest further that the protons and neutrons are constantly shifting positions within the atomic nucleus. In certain isotopes there would be a free neutron passing among atomic shells, thus creating the possibility for neutron decay. The more time a neutron spends as a free neutron within the nucleus, the less the half-life of the atom will be. When the neutron structure is such that all neutrons remain fixed in place with minimal movement within the isotope, it has a longer half-life.

The blue spin position is where the electron would exist within the Aether

[61] Rhumb Line - The path of a ship that maintains a fixed compass direction, shown on a map as a line crossing all meridians at the same angle. Also called *loxodrome*. The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

unit, the red spin position is where the proton would exist, the green spin position is for the anti-proton, and the yellow spin position is for the positron. When the electron or proton exists in forward-time space-resonance, the onta appear to be spinning in one direction. When the antiproton or positron exists through forward-time space-resonance, they appear to be spinning in the other direction.

It appears that the most stable forms of onta (electron and proton) depend on a specific spin direction of space-resonance. "Space parity[62]" in the Standard Model is a preferred spin direction. However, this stability is due more to the preponderance of a given spin direction than to its inherent quality. It is quite possible that the Universe possesses both matter and antimatter galaxies. Since the photon is its own anti-particle, it could easily traverse either type of galaxy without annihilation. If a galaxy constructs from anti-matter, we may be able to observe it as though it were normal matter.

The Aether is also the source of elementary charge. As the angular momentum of an electron exists within the Aether, it picks up the negative charge of the Aether electrostatic dipole. As the angular momentum of a proton exists within the Aether, it picks up the positive charge of the Aether electrostatic dipole. Similarly, the anti-proton and the positron pick up the charges of the portion of Aether in which they reside.

A key to understanding the Aether geometry is the realization that the spheres do not pertain to dimensions of length, even though, in order to represent time, the spheres appear as lines on paper. Time and frequency do not have length dimensions, but their effect on space gives them the appearance of having length dimensions. Likewise, physical space is toroidal (cardioidal, really), but because physical space orthogonally connects to time and frequency, the effect is that of a cube when plotted in spherical coordinates. A further explanation of this conversion of toroidal angular momentum to Cartesian geometry is on page 270.

What the Aether is not

The Aether is not a physical particle as Heinrich Hertz and others have thought. When looking at the geometry of the Aether, one is looking at the spin positions available to matter. The spin positions are like holes, but with reality. We may normally think of holes as the absence of

[62] PARITY or space parity, in physics, quantity that refers to the relationship between an object or process and the image that it can produce in a mirror. For example, any right-handed object will produce a mirror-image counterpart that is identical to it in every way except that the mirror image is left-handed. A moving particle that spins in a clockwise manner, as would a right-handed screw advancing through space, will possess a mirror-image particle that is identical to it in every way except that it spins counterclockwise, as would a left-handed screw advancing through space. The law of conservation of parity implies that every real object or process has a mirror image that can also exist and that obeys the same physical laws. Although this concept has little significance in classical physics, it is of great importance in atomic and nuclear physics. From this law scientists inferred that all elementary particles and their interactions possessed mirror image counterparts that also exist. However, in 1956 T. D. Lee and C. N. Yang published a paper in which they argued that parity was not conserved in weak interactions. "Parity ," The Columbia Encyclopedia , 6th ed.

matter, but in the Aether, holes are units of rotating magnetic field that act as containers for angular momentum. Further, these angular momenta must be exactly the same magnitude as the Aether spin positions, or they will wander between Aether units, unable to interact with the physical world (as in the case of neutrinos).

The Aether is not a wave. However, the Aether units can produce waves, even without photons traveling through them. In addition, these waves can carry real signals if the Aether is magnetically pulsed. The Aether waves are longitudinal waves of gaseous Aether movement, much as Nikola Tesla envisioned. Tesla also suggested that longitudinal waves in the Aether might travel faster than the speed of light. Sir Edmund Whittaker made similar observations:

> Stokes's explanation harmonises in a curious way with Fresnel's hypothesis that the velocity of longitudinal waves in the Aether is indefinitely great compared with that of the transverse waves; for it is found by experiment with actual substances that the ratio of the velocity of propagation of longitudinal waves to that of transverse waves increases rapidly as the medium becomes softer and more plastic[63].

The Aether is not a fluid, although it behaves like one; just as sand is not a fluid, but can behave like a fluid when agitated. When the Aether is agitated, molecules and atoms rearrange without a direct effect on the binding forces of the atoms and molecules. In his experiments, John Hutchison rearranges molecules and atoms of aluminum by generating a high frequency rotating magnetic field with electrons[64].

An Aether unit is neither motionless, nor is it always in motion. Massive objects require more Aether units than low-density space. If the object is in motion, a certain amount of Aether will follow it[65]. This is possible due to the independent nature of Aether units.

[63] Sir Edmund Whittaker A History of the Theories of Aether and Electricity; The Classical Theories (London; New York, American Institute of Physics, 1987) 128

[64] Photo from The Hutchison Effect, http://www.hutchisoneffect.org/

[65] "Fresnel further assumed that, when a body is in motion, part of the Aether within it is carried along-namely, that part which constitutes the excess of its density over the density of Aether *in vacuo*; while the rest of the Aether within the space occupied by the body is stationary." Sir Edmund Whittaker A History of the Theories of Aether and Electricity; The Classical Theories (London; New York, American Institute of Physics, 1987) 110

Aether Carries Along With Matter

"In 1904, Morley and Miller were the first to do a hilltop experiment: 'Some have thought that [the Michelson-Morley] experiment only proves that the ether in a certain basement room is carried along with it. We desire therefore to place the apparatus on a hill to see if an effect can there be detected'. "E. W. Morley and D. C. Miller, *Phil. Matg, 9*, 680 (1905)."[66]

With regard to the Morley and Miller experiment, even the atmosphere constructs from onta encapsulated in Aether. The unexpected result of measuring Aether movement with an interferometer was that while Aether units are independent of each other and are extremely willing to move, they are also individually extremely dense and behave like a solid. Therefore, since even the windiest atmosphere has relatively low intermolecular speeds, the Aether behaves as a solid clump within it. As far as the light beam traveling through it is concerned, there is practically no Aether movement. However, as matter becomes less dense, so does the density of the Aether, thus less dense matter will have a greater proportion of background Aether drifting through it than will dense matter.

Since Aether units can move independently of each other, the Aether fabric across the Universe is not absolute. However, because of the independent and fluid nature of Aether units, clumps of Aether can form isolated regions of more or less absolute space-time. This must be true since space-time bends around massive bodies and allows for the observed lensing of light. Moreover, with this understanding, the Michelson–Morley, and Morley–Miller Aether experiments were a success, because they provided evidence that Aether units move with physical matter (the basement and air molecules). The experiments were also a success in that they *did* show an Aether drift, even though it was of a lower magnitude than anticipated.

Aether Unit

In the Aether Physics Model, the Aether has a quantum unit dimensionally equal to a 2-spin rotating magnetic field (*rmfd*). The rotating magnetic field appears to be manifested by the Gforce and appears to be the "container" in which onta exist in space-resonance.

The value and dimensions of *rmfd* are:

$$rmfd = 1.419 \times 10^{12} \frac{kg \cdot m^3}{sec^2 \cdot coul^2} \tag{4.1}$$

It is due to the nature of Aether, which allows only one onn per spin position,

[66] Quoted from Abraham Pais, Subtle Is the Lord?: The Science and the Life of Albert Einstein (Oxford: Oxford University Press, 1982) 113.

that one onn cannot pass through another, fashioning the appearance of "solid matter." Moreover, it is due to the multiple Aether units that they eventually produce cubic and other forms, which translate as solid matter (this is further discussed on page 269).

In the Aether unit, there are only two possible spin positions for normal, stable matter. There are two other spin positions for anti-matter, but the matter and anti-matter cannot exist near each other, because opposite spins with the same mass tend to collide with each other. There are two dimensions of length on the cardioid spin positions, and there is one dimension of length between the Aether units. These three dimensions of length all intersect at right angles from each other, just like the three dimensions of length in a Cartesian coordinate.

The double cardioid geometry represents the shapes produced by the non-material Aether unit. The only time there are literally two cardioid objects adjacent to each other is when two onta are bound to each other, or when a photon forms.

The ***rmfd*** constant fulfills the same function for strong charge that Coulomb's constant fills for electrostatic charge and Newton's constant fulfills for mass. The ***rmfd*** unit would name the "constant of proportionality" for the strong force law, if we were to use the same method of ignoring non-material physical structure as the Standard Model.

Since the mass to strong charge ratio is the same for all onta and for the Aether, the ***rmfd*** unit is the same when expressed in terms of the proton and neutron and Aether, as well as the electron.

$$rmfd = \frac{m_a \cdot \lambda_C{}^3 \cdot F_q{}^2}{e_a{}^2} \quad \text{Aether} \tag{4.2}$$

$$rmfd = \frac{m_p \cdot \lambda_C{}^3 \cdot F_q{}^2}{e_{p\max}{}^2} \quad \text{Proton} \tag{4.3}$$

$$rmfd = \frac{m_n \cdot \lambda_C{}^3 \cdot F_q{}^2}{e_{n\max}{}^2} \quad \text{Neutron} \tag{4.4}$$

The value of ***rmfd*** is "magickal" in many ways. It is equal to Coulomb's constant times $16\pi^2$.

$$rmfd = 16\pi^2 \cdot k_C \tag{4.5}$$

The dimensions of ***rmfd*** are equal to magnetic field times frequency, thus providing evidence that the unit of ***rmfd*** is indeed a rotating magnetic field.

$$rmfd = mfld \cdot freq \tag{4.6}$$

Like energy, *rmfd* is a common unit from which many other units convert.

Rmfd equal photon per strong charge. This is the manifestation of rotating magnetic field occurring in the Hutchison effect. High-energy photons (microwaves) bombard electrons (strong charge) and produce a rotating magnetic field.

$$rmfd = \frac{phtn}{chrg} \tag{4.7}$$

Rmfd equal magnetic flux times velocity. This is the manifestation of rotating magnetic field found in electric motors. The static magnetic flux associated with a fixed magnet or electromagnet spins mechanically at a velocity.

$$rmfd = mflx \cdot velc \tag{4.8}$$

Rmfd equal potential times length. This manifestation of rotating magnetic field appears in the streamers of high potential discharges, such as in Tesla coils. The rotating magnetic field causes helices in the streamer.

$$rmfd = potn \cdot leng \tag{4.9}$$

Rmfd equal surface tension per charge density. This manifestation of rotating magnetic field appears in Chukanov's spheres[67].

$$rmfd = \frac{sten}{chgd} \tag{4.10}$$

Some of the greatest advances in technology are yet to materialize, and will utilize the rotating magnetic field in one form or another. Nikola Tesla already gave us one form of this rotating magnetic field technology with his polyphase AC motor. We can easily see just how significant the polyphase AC motor has been in transforming civilization.

John Hutchison stumbled upon the manifestation of the rotating magnetic field, which bears his name, the Hutchison effect. The Hutchison effect can cause heavy objects of any material to accelerate away from the Earth, can cause metals to "melt" without getting hot, and cause dissimilar materials such as aluminum and wood to fuse without chemically changing.

There are likely many medical advances waiting for discovery with the rotating magnetic field of Aether as well.

[67] Chukanov Energy http://www.chukanovenergy.com/index.htm

Spin Structure

Onta get their spin from the oscillating nature of time. It is common to think of time as the "normal" dimension, and frequency as the reciprocal of time, but it is the other way around. Time is really a frequency that oscillates one quantum moment toward the future and one quantum moment toward the past.

However, physical matter only moves forward in time, with the effect that physical matter acts like a time diode and presents a version of time similar to rectified AC current. We see half-spin onta from the perspective of half-spin onta, and thus the illusion of forward, linear time. In reality, time pulses and causes physical existence to take on the nature of frames, like frames of a movie.

The spin structure has spin like a top, but in time it also has spin like a corkscrew. As a stable onn traces its spin position in the Aether unit, it moves forward in time and appears to rotate. After the onn advances through forward time, it reverses toward negative time. Negative time is a completely different time direction which onta cannot see. As far as the existence of physical matter goes, the two time directions are mutually exclusive of each other. However, as far as the Aether and Gforce go, there is no net forward or backward direction of time, there is only the present. Linear time is strictly a phenomenon experienced by matter.

An exact understanding of Aether spin is not yet complete. In the images of Aether units presented in this book, the endpoints of the loxodromes go through the poles of the spheres. However, the electron and proton g-factors suggest that the endpoints may offset from the poles when moving through Aether units. The possibility that the time dimension may be egg shaped due to the charged spheres attracting each other also needs investigation.

Fortunately, good documentation of the half-spin nature of onta exists in the scientific literature even though the precise geometry of the Aether does not. This allows us to further our understanding of the spin of the Aether.

Aether Dipoles

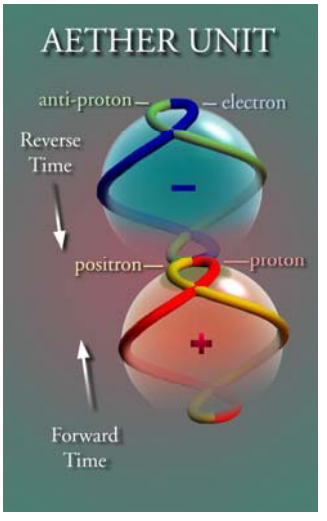
> STUDIES in recent years of the dielectric properties of gases and electrolytes show that electrical forces and inductions in such media depend upon the polarized ions or "dipoles" of the medium. Why not extend the same concepts to electrical forces and inductions across a vacuum, that is, through the ether? We must then conceive of the ether as a medium with a structure, that is, with "ether dipoles." By such a concept, we would obtain an explanation of "electric forces acting at a distance," something that has been very vague, or lacking, since the discard of the Maxwell ether displacement theory of electric charges and electric forces. The discovery of the

> electron disproved the ether displacement theory of electric charges, but it did not remove (for many physicists) the need of the ether concept in explaining electric waves, whether luminous or non-luminous. The actual structure of the ether will be a speculative problem until experiments have given us more facts in ether physics; but in view of the above, we can think of the ether as having an indefinitely large number of infinitesimal "ether dipoles."[68] – Albert P. Carman

As shown in the image on the next page, the quantum Aether unit models as a dipole structure. Not only does the Aether unit have an electrostatic dipole, but the Aether encapsulated onta also has an electromagnetic dipole as well. Just as Albert Carman envisioned, the Aether fabric can visualize as an indefinitely large number of quantum Aether dipoles.

Aether Structures

As we look into atomic structure, it becomes apparent that Linus Pauling's Spheron Model[69] accurately describes the fill pattern of atomic nuclei. The fill pattern rests on a peculiar system of half-spin numbers. As it turns out, this system of half-spin numbers is the actual "numbering system" used by the Aether.



How can there be a half-spin numbering system in the Aether? Because human senses perceive that one onn occupies one unit of space-time. However, onta cannot fill an entire Aether unit, which leaves three spin positions unaccounted for. The Aether unit divides into four portions of spin positions in forward time. Of these four spin positions, only two occur in left hand spin, meaning there are only two possibilities for stable matter, the electron, and proton. Each spin position has exactly half-spin.

It is the half-spin onn per Aether unit, which distorts physical structures relative to Aether structures. This distortion is apparent wherever Aether interacts directly with onta. The logarithmic scale is a direct result of the interaction between half-spin onn and Aether (although one-spin photons also cause a distortion with regard to Aether).

The left hand spin characteristic of stable onta supports Tsung Dao Lee and Chen Ning Yang's violation of parity theory [62]. The left-hand-only spin characteristic of onta appears when free electrons eject during beta decay or when streaming as free electrons in a current. In electrostatic binding or strong charge binding, the onta are moving toward each other and spinning in opposite directions and so exhibit both left hand and right

[68] Albert P. Carman, *Science*, New Series, Vol. 71, No. 1834 (Feb. 21, 1930), 214-215.

[69] Linus Pauling, *Science, New Series, Vol. 150, No. 3694*. (Oct. 15, 1965), pp. 297-305.

hand spins.

The Aether further evidences a preferred spin direction as observed in the asymmetry of matter/anti-matter existence. Nature does prefer matter to anti-matter[70], at least in our part of the Universe. The Aether Physics Model attributes this apparent preference to the gravity repulsion effect of matter to anti-matter. Matter and anti-matter collide and produce photons when they encounter each other, but they gravitationally repel each other at a distance. The gravitational repelling effect is the antithesis of gravitational attraction. Since matter in our part of the Universe happens to be left-hand spin, and since for practical reasons there is no anti-matter within atoms or molecules, for purposes of quantifying material structure the Aether essentially is a two-spin-position unit.

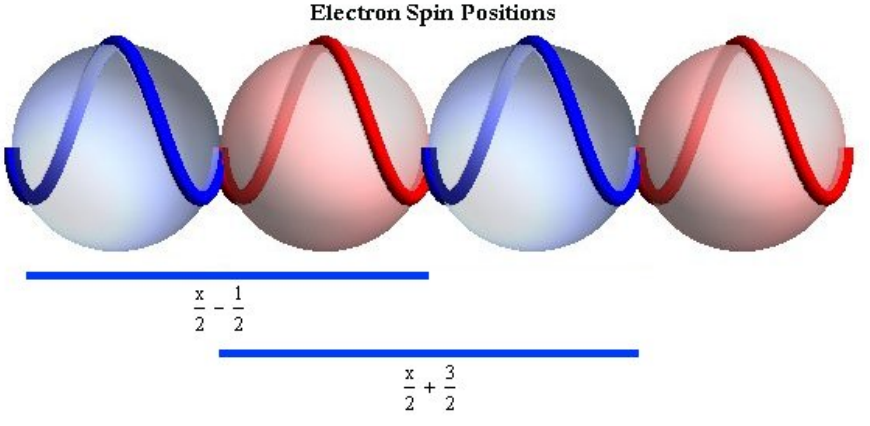
The proton spin position is equal to half the Aether unit, plus ½ spin for the proton spin position itself. The electron spin position is equal to half the Aether unit, minus ½ spin.

$$\frac{y}{2}+\frac{1}{2} = \text{proton spin position} \tag{4.11}$$

$$\frac{x}{2}-\frac{1}{2} = \text{electron spin position} \tag{4.12}$$

And since the Aether units are polar aligned (negative is attracted to positive), the electron spin position could just as easily be thought of as half the Aether unit, plus 3/2-spin:

$$\frac{x}{2}+\frac{3}{2} = \text{electron spin position} \tag{4.13}$$



In the above image, the electron spin position represents by the blue loxodrome and the proton spin position is the red loxodrome. In either case, the electron and proton spin positions provide the only possibilities

[70] "The experimental work of Val L. Fitch and James W. Cronin in 1964 demonstrated an asymmetry in matter/antimatter reactions that may explain why the universe is composed mostly of matter. For their discovery, they shared the 1980 Nobel Prize in Physics. " "Antiparticle," The Columbia Encyclopedia, 6th ed.

for real matter to manifest in our part of the Universe.

Since the electron and proton spin positions are part of the spheres of Aether, and since the Aether constant is equal to $16\pi^2$ $(4\pi \cdot 4\pi)$, which implies the two spin positions are orthogonal to each other, we can assume that the proton and electron spin positions are also orthogonal to each other. The array determines the full range of spin positions available to a given number of Aether units.

$$G(x,y) := \frac{x+1}{2} \cdot \frac{y-1}{2} \tag{4.14}$$

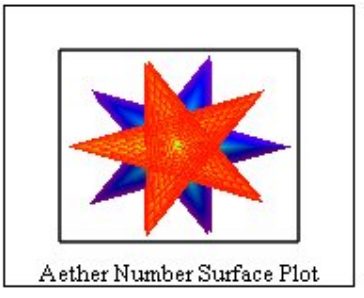
In the above equation, x and y are integers representing the total number of proton and electron spin positions available for a given structure as viewed from the macro world.

Using the CreateMesh function of MathCAD, the Aether numbers can be surface plotted. When first investigating Aether numbers, we arbitrarily assumed a fixed mesh of 80 x 80. We also assumed that a complete cycle of data (t) would be half the odd whole number h times π.

$h := 63$ $\quad$ $mesh := 80$

$G(x,y) := \frac{x+1}{2} \cdot \frac{y-1}{2}$ $\quad$ $t := \frac{h}{2} \cdot \pi$

S := CreateMesh(G,−t,t,−t,t,mesh,mesh,cyl2xyz)



Aether Number Surface Plot

S

We have since found the above assumptions were incomplete. In nature, the mesh is infinite, being a perfectly curved surface. Also, at the quantum level there are five dimensions of space-resonance, rather than our four dimensional macro perspective of space-time. With the discovery of the electron binding energy equation for ground state electrons, the number of Aether units in five dimensions empirically induces as $\frac{\sqrt{x^2+1}}{2}$ reinforcing the notion that Aether structures have a spiral nature to them. It remains to mathematically prove this hypothesis.

Notice in the above image the shallow image (red) is 180º out of sync with the deeper half of the image (blue). The shallow half of the image appears to represent the forward time portion of the Aether structure and the deeper half the backward time portion.

Let us change the function of G to reflect Aether structures indicated by the variable 1s orbital electron radii in the electron binding energy equation:

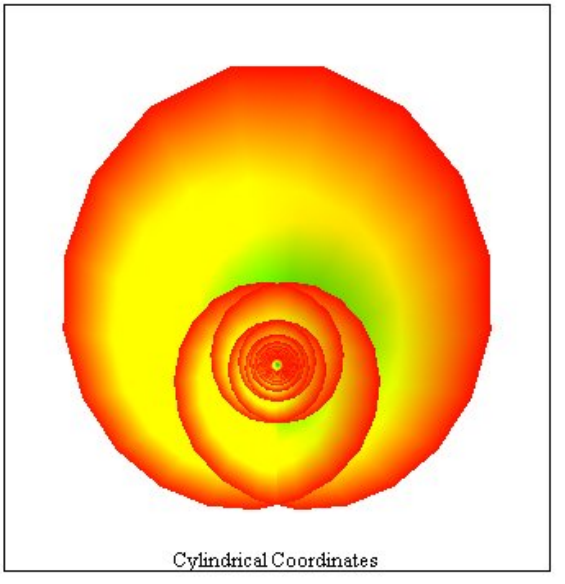
$$G(x,y)=\frac{\frac{\sqrt{y^2+1}-1}{2}}{\frac{\sqrt{x^2+1}+1}{2}} \tag{4.15}$$

We will also change the mesh to be proportional to h by a factor of ten. This eliminates the distracting artifacts of different shapes caused by different proportions of h to the mesh. (Although different meshes may not apply to the quantum level, they may still have relevance to macro structures.) Consequently, we now see a nearly curved structure, which we imagine as perfectly curved. Because the mesh is now proportional to h, all generated images will show the same proportion of "nearly curved" structure.

$h := 63$

$$G(x,y) := \frac{\frac{\sqrt{y^2+1}-1}{2}}{\frac{\sqrt{x^2+1}+1}{2}} \qquad mesh := h\cdot 10 \qquad t := \frac{h}{2}\cdot\pi$$

$S_1 := CreateMesh(G,-t,t,-t,t,mesh,mesh,cyl2xyz)$

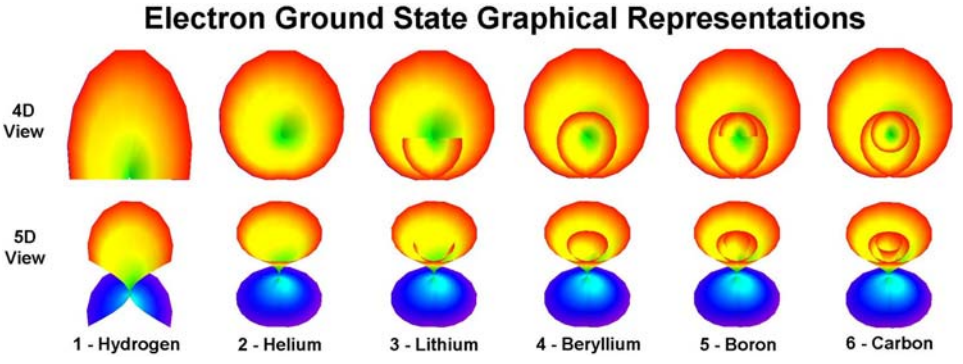


S_1

In the preceding two views of the Aether structures, we are looking down the time axis (z axis) of the Aether units. In the former view on the preceding page, the forward time portion is discordant with the backward

time portion. In the latter view above, which modifies according to the electron binding energy equation, the two views are coordinated, which is why the blue image is not visible.

We can now view graphical representations of the ground state electron in each atom. We will also change our perception from four dimensions to five dimensions so we can see more detail of how quantum structures operate. Keep in mind that the pictures shown here are only static, two-dimensional representations of a dynamic, five-dimensional structure.



As the ground state electron structure grows in complexity, its proportion of minor radius to major radius spirals inward.

Whereas the mesh for quantum structures is infinitely smooth, that is not the case for macro structures. As atoms bind to produce molecules, and molecules bind to produce structures of greater complexity, the mesh becomes grainier. The patterns formed for a particular granulation will differ from others. The coarseness of the granulation is likely variable according to size, mass density, temperature, pressure, and other considerations.

Granular Aether Structures

Our original investigation conducts as a general exploration of Aether structures for a mesh of 80 x 80. We provide this earlier view to show the general direction a more detailed analysis of macro Aether structure might follow.

Starting from a very simple data set, assume there is a space-resonance cluster containing π number of Aether units. We produce a contour graph of the spin positions in the Cartesian coordinate system. To see what the contour actually looks like we can examine this graphic, which represents the function of $G(x, y)$ from three different angles within five-dimensional existence. This characteristic of the Aether demonstrates its *orthogonality*.

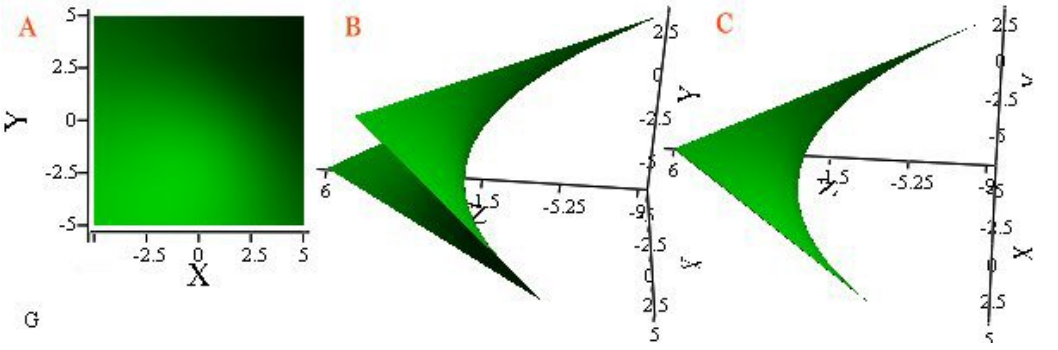
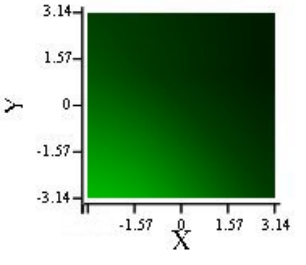


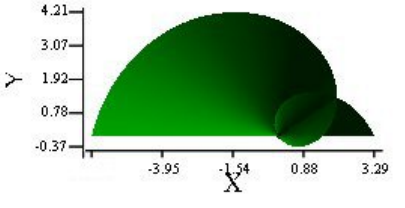
Image A is a view of the contour plot directly down the Z-axis (linear time axis) and looking at the X and Y-axis in a Cartesian coordinate system. Image B is from a different perspective in the same coordinate system and shows that the contour plot is a 3D image over time. Image C shows the same data set appearing as a curve from a position orthogonal to the time axis.

This representative view of the data demonstrates the orthogonality of the Aether. In other instances, the Aether appears to be electromagnetic from one view and mechanical from a different view. The Aether appears angular from one view and curved from another view. This is what we mean when we say the Aether has orthogonality.

Applying a range of $-\pi$ to π to equation (4.14), the following contour data generates in the Cartesian coordinate system (it is the same as the image above).

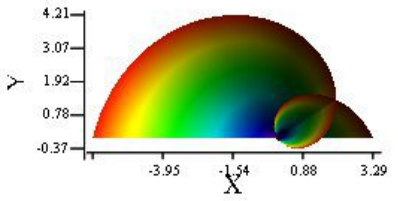


Using the same equation, but applying it to a cylindrical coordinate system, the data appears as a spiral cone.



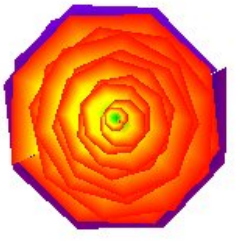
Now we will present the above image with a color map scheme so it will be easier to visualize the data. The bluer colors are deep and the redder

colors are shallow. The deep blue represents an earlier time than the shallow red.

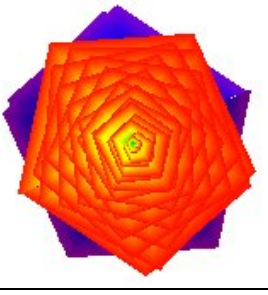


In the image below, the range is increased from π to $\frac{19}{2}\pi$. In the cylindrical coordinate system, each full cycle of revolution is equal to 2π. By choosing the negative and positive values for a given range, we are essentially using twice the range. Thus by keeping units in multiples of π we always have a full cycle (2π) of data. Similarly, since we are viewing the Aether structures in the form of $\frac{x\pm1}{2}$ it is necessary for the numerator to be an odd integer if we are to get a whole cycle of data.

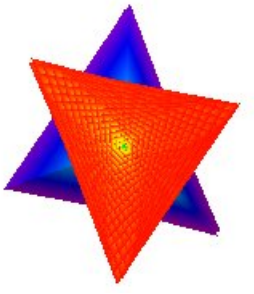
The angle of the image above does not change from the previous images and neither has the view angle of the few succeeding images (all images view looking down the Z-axis). The image below represents a range from $-\frac{19}{2}\pi$ to $+\frac{19}{2}\pi$.



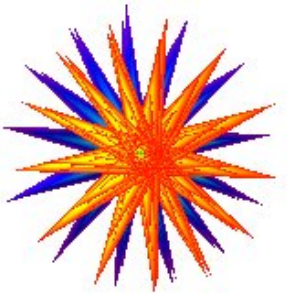
The appearance of the flower pattern is interesting, but is not the object of this investigation. Changing the range from $-\frac{31}{2}\pi$ to $+\frac{31}{2}\pi$, the geometry completely changes while maintaining a similar order.



Now we begin to see the importance of our investigation of Aether structures. Although these images are number generated, they base on the proportion of Aether to half-spin onta. For the next image, the range is set for $-\frac{53}{2}\pi$ to $+\frac{53}{2}\pi$.

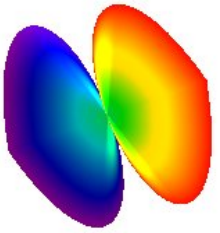


Six polygonal shapes are generated as Aether structures, ranging from 3-sided to 8-sided polygons. There are also a number of star shapes varying from 5 points to 13 points and more. The range of the following image was set for $-\frac{73}{2}\pi$ to $+\frac{73}{2}\pi$.

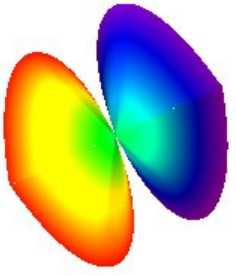


In all of the cylindrical coordinate images presented here, the red-orange colors represent a geometry facing the forward time direction, while there is also a similar but slightly different shape facing the backward time direction. The blue colors are the backside of the red shape. This 13-point star is just one of many stars generated in this sequence of Aether structures, including near perfect 5 and 7 point stars.

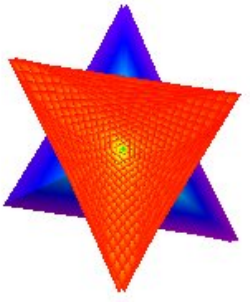
The shapes do not morph ceaselessly, however. Just as musical tones continually repeat as harmonics in logarithmically increasing octaves, the Aether shapes also repeat themselves, albeit in a mirrored type of manner. For the range of $-\frac{157}{2}\pi$ to $+\frac{157}{2}\pi$ this image appears:



However, the next image in the sequence for the range $-\frac{159}{2}\pi$ to $+\frac{159}{2}\pi$ mirrors the above image.



From here, the images repeat themselves. For example, the image determined by the range for $\frac{53}{2}\pi$ is replicated in the range of $-\frac{105}{2}\pi$ to $+\frac{105}{2}\pi$.



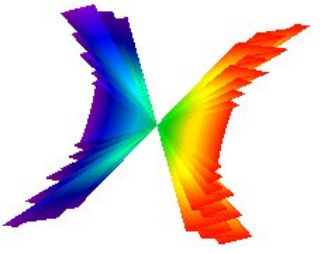
The range for the next replication of the triangle is twice the previous triangle range base plus the current range base:

$$2 \cdot 53 + 105 = 211 \tag{4.16}$$

So the next range that will produce the triangle would be $\frac{211}{2}\pi$.

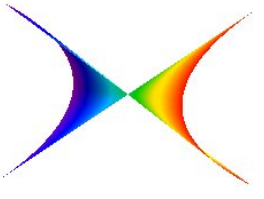
Going back to the two consecutive images that mirror each other, $\frac{157}{2}\pi$ and

$\frac{159}{2}\pi$, the image in between must represent the "maximum" of the overall image cycle. This is the point where the progression of the images reverses itself. The image for the exact range of $-\frac{158}{2}\pi$ to $+\frac{158}{2}\pi$ takes on a completely different form than the slightest departure from $\frac{158}{2}\pi$.

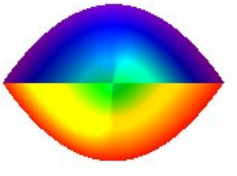


The above image is a very precise crossing point, providing evidence for the reality of the Aether structures. In other words, the Aether structures presented here are not a fantasy of numerology and pictures; this presentation represents a very real geometrical cycle of half-spin onn and Aether units.

As it turns out, the value 158 is very close to the Aether geometrical constant of $16\pi^2$ (157.914). The surface plot for the range using $16\pi^2$ instead of 158, $-\frac{16\pi^2}{2}\pi$ to $+\frac{16\pi^2}{2}\pi$, is shown below:



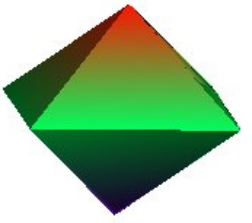
The above image views from the same angle as the previous image. Another view made by rotating the $16\pi^2$ data presents the image in the shape of an eye.



The eye is a fitting symbol for the $16\pi^2$ Aether geometrical constant, which

is already associated with the dynamic and living Aether unit. As a side note, the ancient Egyptians and modern Freemasons use the "all-seeing eye" as a symbol for God. In fact, the all-seeing eye appears on every American dollar bill, over a pyramid.

Just for fancy, the Aether numbers applied to the spherical coordinate system can produce reflecting pyramids, too. The image below is produced in the spherical coordinate system with the range base of $\frac{41 \cdot 105}{2}\pi$:



When $16\pi^2$ is applied to the surface plot, it gives a slightly different value than when 158 is applied. The ratio of the Aether half-spin value to the Aether constant value is the offset.

$$\frac{\frac{158}{2}\pi}{\frac{16\pi^2}{2}\pi} = 1.00055 \tag{4.17}$$

We see an offset wherever the Aether interfaces with half-spin onta. For example, the offset of the onta with regard to the Aether is the onn g-factor. The offset of the Aether-based Pythagorean scale of music and the physical tempered scale of music is the tempered semitone[71]. Undoubtedly, there are other examples.

Whether or not there is a direct relationship, it is interesting to note that the Aether structure offset is approximately equal to the square root of half the electron g-factor:

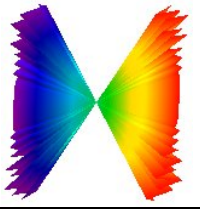
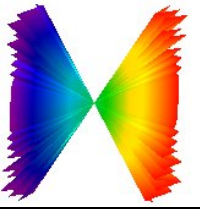
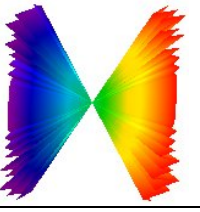
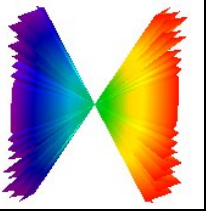
$$\sqrt{\frac{1}{\sin(Phi)}} = 1.00056 \tag{4.18}$$

where Phi is the Golden Ratio and the g-factor equation is that of the Aether Physics Model (page 170).

Just as octaves increase logarithmically in the tempered music scale, the Aether structures also increase logarithmically, further establishing the

[71] Backus, John The Acoustical Foundations of Music: Musical Sound: its properties, production, behavior, and reproduction (New York, W.W. Norton & Company, Inc., 1977) 147

reality of the structures. In the Aether structure series, $\frac{158}{2}\pi$ is an exact "octave." Each successive "octave" calculates by the formula $\frac{2^x \cdot 158}{2}\pi$ where x is the number of octaves ascending from the base octave of zero. (The word "octave" does not truly apply to Aether structures since there are more than 8 "whole tones" in each octave; here it indicates a complete set of steps within a cycle). To illustrate that each octave of $\frac{2^x \cdot 158}{2}\pi$ produces the same image, see the random octaves below:

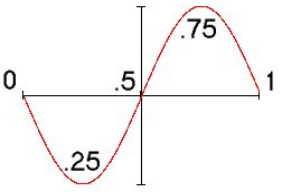
$\frac{2^2 \cdot 158}{2}\pi$	$\frac{2^5 \cdot 158}{2}\pi$	$\frac{2^9 \cdot 158}{2}\pi$	$\frac{2^{11} \cdot 158}{2}\pi$
			

The world comprising human experience has many variations in form. But within these forms we see patterns. Flowers tend to have petal or spike patterns, as seen in the above graphics. Flowers even seem to reflect the Fibonacci sequence, which is also a manifestation of Aether numbers. Seashells and other exoskeletal creatures tend to have the shapes found in Aether structures when applied to the spherical coordinate system. The bell pepper, seeds, and numerous other shapes model after Aether structures in the spherical coordinate system. So the world of seemingly infinite form is really a symphony of shape, repeating at various octaves, sometimes harmoniously, and sometimes not.

These forms originate in the independent nature of Aether units. After examining Aether units with respect to half-spin onta, it is very easy to see how the physical Universe can have so much variety in all its forms. Yet it is quite remarkable that all the variations of forms that we see arise from just two discrete onta, the electron and proton, and their relationship to the Aether.

Below is a table showing the progression of the square root of Aether numbers. Notice the product of the proton and electron spin position numbers equal an even interval of ¼. The curvature of Aether implies that the "quarter phases" refer to a cycle. The implication is that a full cycle consists of 5 Aether units. It is likely that there is a trigonometric connection to the Aether numbers. Notice that zero has a real place in this progression.

x =	$\frac{\sqrt{x}+1}{2}$ =	$\frac{\sqrt{x}-1}{2}$ =	$\frac{\sqrt{x}+1}{2}\cdot\frac{\sqrt{x}-1}{2}$
1	1	0	0
2	1.207	0.207	0.25
3	1.366	0.366	0.5
4	1.5	0.5	0.75
5	1.618	0.618	1
6	1.725	0.725	1.25
7	1.823	0.823	1.5
8	1.914	0.914	1.75
9	2	1	2
10	2.081	1.081	2.25
11	2.158	1.158	2.5
12	2.232	1.232	2.75
13	2.303	1.303	3
14	2.371	1.371	3.25
15	2.436	1.436	3.5



The electron and proton spin positions, which determine the structure of the physical world, have both a *Phi* and a *phi* component. We could think of these components as square roots, but they are square roots within the Aether structure. Both *Phi* and *phi* are series numbers and generate by the formulas:

$$\frac{\sqrt{x}+1}{2} = Phi \tag{4.19}$$

$$\frac{\sqrt{x}-1}{2} = phi \tag{4.20}$$

Golden Ratio

In equations (4.19) and (4.20), the variable x denotes as the sequence number of Aether units. It is here that we learn from the Aether something very telling. When five Aether units make up a cycle, *Phi* is the Golden Ratio and *phi* its inverse.

$$\frac{\sqrt{5}+1}{2} = 1.61803398874989 \tag{4.21}$$

$$\frac{\sqrt{5}-1}{2} = 0.61803398874989 \tag{4.22}$$

Whereas the product of *Phi* and *phi* give the phase of the cycle, the sum of *Phi* and *phi* give the square root of the sequence. This explains why *Phi* and *phi* show up continually in the physical world, wherever growth occurs and living forms appear. Growth occurs in cycles, and therefore we would expect the cycles to reflect the Fibonacci sequence.

There are many good sources of information about the Fibonacci sequence and its appearance in living and growing systems. If the reader is not familiar with the Fibonacci sequence, Internet web sites can give an

introduction. A good place to start is

http://www.goldennumber.net/

and Ron Knott's web site.

http://www.mcs.surrey.ac.uk/Personal/R.Knott/Fibonacci/fib.html

The Golden Ratio: The Story of Phi, The World's Most Astonishing Number by Mario Livio is also a good read.

Pythagorean Concepts

The Aether numbers also determine harmony in music. Pythagoras gets credit for developing a scale of tones still known as the Pythagorean scale[72]. However, other sources indicate the Pythagorean scale may have originated much earlier. Little information about Pythagoras exists, but there are accounts that he either learned directly from the Egyptians or else from the students of Thales. Thales himself learned geometry from the Egyptians.

> Beginning with the discovery that the relationship between musical notes could be expressed in numerical ratios, the Pythagoreans elaborated a theory of numbers, the exact meaning of which is still disputed by scholars. Briefly, they taught that all things were numbers, meaning that the essence of things was number, and that all relationships — even abstract ethical concepts like justice — could be expressed numerically. They held that numbers set a limit to the unlimited — thus foreshadowing the distinction between form and matter that plays a key role in all later philosophy[73].

There are many today who believe that mathematics is only a language, and that mathematics of itself does not reflect reality. With regard to calculus, they are probably correct. Electrons and protons are primary angular momentum and the basis of all physical matter, but the spin positions taken by this primary angular momentum are purely numerical. Thus, it is possible for a physical entity to have a numerical representation via its spin position.

Using the onta spin positions of the Aether, a relationship of harmonic notes emerges. From this relationship, it is possible to calculate the next note up or down the musical scale relative to a reference frequency.

The basis of the formula is the musical fifth, as taught by Pythagoras. If we take a guitar string and place a bridge at the middle, the string on both sides of the bridge produces the same note. This is unison and its ratio is

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[72] Backus, John The Acoustical Foundations of Music (New York – London, W.W. Norton & Company, 1977) 138

[73] "Pythagoras ," The Columbia Encyclopedia , 6th ed.

1:1. When we place the bridge so that the ratio is $\frac{1}{2}$, the two resulting notes are one octave apart. The next division of the string is the ratio $\frac{3}{2}$. In this case the notes produced, one on either side of the bridge, are a fifth apart from each other. The fifth, having a ratio of $\frac{3}{2}$ becomes a constant, which produces each succeeding fifth.

Let us assume we wish to find the fifth to a note, which we will specify as C at the frequency of $523.25Hz$. C can be expressed in terms of fifths as, $\frac{3^0}{2^0}\times 523.25Hz$, which equals $1\times 523.25Hz$ or $523.25Hz$. To calculate the fifth to C, which is G, we multiply $\frac{3^0}{2^0}\times\frac{3^1}{2^1}\times 523.25Hz$. When multiplying exponentials we add the exponents, and so the formula becomes $\frac{3^{0+1}}{2^{0+1}}\times 523.25Hz$ or $784.88Hz$.

To calculate the value of the second fifth above C we follow the same procedure, except that we multiply by $\frac{1}{2}$ in order to acquire the value of the D that is in the same octave as the initial C. Hence $\frac{3^0}{2^0}\times\frac{3^1}{2^1}\times\frac{3^1}{2^1}\times\frac{1}{2^1}\times 523.25Hz$ which is the same as $\frac{3^2}{2^3}\times 523.25Hz$ or $588.66Hz$. Using the above method, computation of ratios for each note relative to C result:

C	$C\#$	D	$D\#$	E	F	$F\#$	G	$G\#$	A	$A\#$	B
$\frac{3^0}{2^0}$	$\frac{3^7}{2^{11}}$	$\frac{3^2}{2^3}$	$\frac{3^9}{2^{14}}$	$\frac{3^4}{2^6}$	$\frac{3^{11}}{2^{17}}$	$\frac{3^6}{2^9}$	$\frac{3^1}{2^1}$	$\frac{3^8}{2^{12}}$	$\frac{3^3}{2^4}$	$\frac{3^{10}}{2^{15}}$	$\frac{3^5}{2^7}$

When we give our starting point a variable instead of the note C, a simple equation results for calculating the frequency (F) of any note relative to another frequency (K), where n is equal to any integer representing the number of notes to increase or decrease from the reference frequency:

$$F = K\frac{3^n}{2^{\left(n*\frac{3}{2}\right)}} \tag{4.23}$$

It is easy to see that octaves increase logarithmically, just as do the Aether numbers of form. Figuring for the frequency of $440Hz$, the succeeding octaves are equal to $n=12$, $n=24$, $n=36$, etc.. The resulting frequencies are $880Hz$, $1759.67Hz$, and $3518.02Hz$. The calculations

are not exact due to the rounding of exponentials.

Pythagorean Triples

A Pythagorean triple is a triple of positive integers a, b, and c such that a right triangle exists with legs $a, b,$ and hypotenuse c. By the Pythagorean Theorem, this is equivalent to finding positive integers a, b, and c satisfying $a^2 + b^2 = c^2$ [74]

When I was a student in high school, my math teacher, Mrs. Connie Kimball, gave a lecture on calculating Pythagorean triples. The method she described on the blackboard was long and tortuous. Almost immediately, I recognized a pattern in the table of Pythagorean triples that she had written, and I started working on a different equation than the one she was showing.

Recognizing that I was busy in my own world while she was lecturing, she curtly called me, as teachers do when they think someone is not paying attention. She asked if I could explain what she had just said. I told her I could not, but that I had found a new equation for generating Pythagorean triples that was far simpler than what she was teaching.

Seizing on the moment to teach me a lesson, she called me to the front of the class to give a demonstration of my equation. When I finished my brief presentation, she was quite impressed. She asked me to stay after school and help her see if such an equation could be found in the professional literature. After a couple of days, we found that Joe Roberts from the Massachusetts Institute of Technology had published the same equation in a mathematics journal just 9 months earlier. It was at this time that I realized there was much left to be discovered in the worlds of math and science.

Here is the equation I had discovered for Pythagorean triples during class that day. For any integer a, the other two values b and c are:

$$b = \frac{a^2}{2} - \frac{1}{2}$$
$$c = \frac{a^2}{2} + \frac{1}{2} \qquad (4.24)$$

A table of Pythagorean triples then generates:

[74] Eric W. Weisstein. "Pythagorean Triple." From *MathWorld*--A Wolfram Web Resource. http://mathworld.wolfram.com/PythagoreanTriple.html

a =	$\frac{a^2}{2} - \frac{1}{2} =$	$\frac{a^2}{2} + \frac{1}{2} =$
2	1.5	2.5
3	4	5
4	7.5	8.5
5	12	13
6	17.5	18.5
7	24	25
8	31.5	32.5

Pythagorean triples cannot have fractions, so for all values of "a" that are even, two multiplies the full set. The resulting table then appears as:

a	b	c
4	3	5
3	4	5
8	15	17
5	12	13
12	35	37
7	24	25
16	63	65
9	40	41
20	99	101
11	60	61
24	143	145
13	84	85

The relevance of Pythagorean triples to the Aether numbers is the form of the equation. The equations for b and c express as in the table below.

In (4.25), the value a is the integer value of the Aether numbers, and the values b and c are the half-spin onn values based on the square of a. Therefore, in addition to the Golden Ratio and growth cycles, it appears we also find the origin of the Pythagorean triples in the Aether.

Certainly, the forms of living and growing things represent numerically whether or not "ethical concepts like justice" do. The Aether Physics Model is consistent with the work of Pythagoras, which itself merits a re-evaluation in this light.

$$b = \frac{a^2 - 1}{2}$$
$$c = \frac{a^2 + 1}{2} \qquad (4.25)$$

Structure of Atomic Nuclei

The Aether determines the structures of atoms. That is, the structure of the Aether becomes the structure of the onta, and therefore of the atoms.

There is a pattern to the development of the nucleus, just as there is a pattern to the development of the electron orbital structure. Wolfgang Pauli discovered that no two onta, in either the nucleus or the electron orbital structure, share the same placements in atomic structure[75]. The Aether

[75] EXCLUSION PRINCIPLE - physical principle enunciated by Wolfgang Pauli in 1925 stating that no two electrons in an atom can occupy the same energy state simultaneously. The energy states, or levels, in an atom

Physics Model is in full agreement with the Pauli Exclusion Principle.

Similar to the electron orbital structure, the nucleus follows a pattern in shell structure. The structure of the nucleus appears to be due to the structure of the Aether. Linus Pauling deduced that in addition to the orbital shells having the magic numbers of 2, 8, 20, 28, 50, 82, and 126, the nucleus builds up in three different layers .

Pauling called these three layers the "mantle," "core or outer core," and "inner core." However, Pauling saw the nucleus constructing as clusters of spherons. A spheron would be a helium nucleus, a proton with two neutrons, or a pair of neutrons.

The Aether Physics Model mathematically shows each layer has the same pattern for filling *spin positions* with protons and neutrons. Both protons and neutrons follow the magic number sequence. Both proton and neutron structures follow the same pattern independently from each other. Since the APM nuclear binding energy equation is not yet complete, it could be that Pauling's spheron concept is correct for particulate structure, and yet the spin structure would still follow an orderly pattern.

This means, for example, that in the first layer and its first shell there can be up to 2 protons and 2 neutrons. Atoms produce the largest "binding energies" after filling both the proton and neutron portions of the layer. When a new layer starts, it always begins at the center of the nucleus.

Following Pauling's pattern of nucleus development, the next magic number in the sequence is 184. Just before the element 184 creates, a fourth layer occurs in the center of the atomic nucleus beginning with elements 167 or 168. Therefore, the complete sequence of magic numbers is 2, 8, 20, 28, 50, 82, 126, and 184.

On the next page is a table of Pauling's layer configurations for the magic numbers[76].

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are described in the quantum theory by various values of four different quantum numbers; the exclusion principle holds that no two electrons can have the same four quantum numbers in an atom. One of these quantum numbers describes one of the two possible directions for the electron's intrinsic spin. As a result of the exclusion principle, two electrons that are in the same energy level as described by the other three quantum numbers are differentiated from each other because they have opposite spins. This principle applies not only to atoms but to other systems containing particles as well, and it applies not only to electrons but also to a large class of particles collectively known as fermions. "Exclusion Principle ," The Columbia Encyclopedia

[76] Nucleon Configurations for the Magic Numbers from Principles of Radioisotope Methodology 1967 p.44, by Grafton D. Chase and Joseph L. Rabinowitz

Magic Number	Mantle	Core or Outer Core	Inner Core
2	$1s^2$		
8	$1s^2\,1p^6$		
20	$2s^2\,1p^6\,1d^{10}\,1f^{14}$	$1s^2$	
50	$2s^2\,2p^6\,1d^{10}\,1f^{14}\,(1g9/2)^{10}$	$1s^2\,1p^6$	
82	$3s^2\,2p^6\,2d^{10}\,1f^{14}\,1g^{18}\,(1h\,l1/2)^{12}$	$2s^2\,1p^6\,1d^{10}$	$1s^2$
126	$3s^2\,3p^6\,2d^{10}\,2f^{14}1g^{18}\,1h^{22}\,(1i\,l3/2)^{14}$	$2s^2\,2p^6\,1d^{10}\,1f^{14}$	$1s^2\,1p^6$

The values from Pauling's charts lay out by layer and shell number. In chart A below, Pauling's chart expands to include the magic number 28 and an additional magic number, 184.

Chart A - Pauling's Nucleon Configurations

	Mantle								Core or Outer Core					Inner Core			Ctr
2	2								2					2			
8	2	6															
20	2	6	10						2								
28	2	6	10	8					2								
50	2	6	10	14	10				2	6							
82	2	6	10	14	18	12			2	6	10			2			
126	2	6	10	14	18	22	14		2	6	10	14		2	6		
184	2	6	10	14	18	22	26	16	2	6	10	14	18	2	6	10	2
Shell #	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	1

Pauling's Nucleon Configurations for the Magic Numbers expanded to include numbers 28 and 184.

On the next page, chart B shows the spin associated with each layer and shell. Beyond shell one there are two "halves" to each shell, which are designated a and b. The spin changes for each half shell. The pattern begins with $\frac{1}{2}$ spin in shell one of the Mantle. We add to shell two, $\frac{3}{2}$ spin in shell 2a and $\frac{1}{2}$ spin in shell 2b. The third sequence continues with $\frac{5}{2}$ spin in shell 3a, then $\frac{1}{2}$ spin in the Outer Core shell 1, and then $\frac{3}{2}$ spin in the Mantle at 3b. The fourth sequence has added, $\frac{7}{2}$ spin in Mantle shell 4a. Then in the fifth, $\frac{3}{2}$ spin adds to the Outer Core shell 2a, $\frac{5}{2}$ spin in Mantle shell 4b, $\frac{1}{2}$ spin Outer Core 2b, and $\frac{9}{2}$ spin is added to 5a. The sixth sequence expands with $\frac{7}{2}$ spin in Mantle shell 5b, $\frac{3}{2}$ spin in Outer Core 3b, $\frac{1}{2}$ spin in Inner Core 1, and $\frac{11}{2}$ spin in Mantle shell 6a. The remaining additions follow the same pattern.

Chart B - Spin per Spheron Subshell

	Mantle														Core or Outer Core										Inner Core					Ctr
2	1/2																													
8	1/2	3/2	1/2																											
20	1/2	3/2	1/2	5/2	3/2										1/2															
28	1/2	3/2	1/2	5/2	3/2	7/2									1/2															
50	1/2	3/2	1/2	5/2	3/2	7/2	5/2	9/2							1/2	3/2	1/2													
82	1/2	3/2	1/2	5/2	3/2	7/2	5/2	9/2	7/2	11/2					1/2	3/2	1/2	5/2	3/2						1/2					
126	1/2	3/2	1/2	5/2	3/2	7/2	5/2	9/2	7/2	11/2	9/2	13/2			1/2	3/2	1/2	5/2	3/2	7/2	5/2				1/2	3/2	1/2			
184	1/2	3/2	1/2	5/2	3/2	7/2	5/2	9/2	7/2	11/2	9/2	13/2	11/2	15/2	1/2	3/2	1/2	5/2	3/2	7/2	5/2	9/2	7/2		1/2	3/2	1/2	5/2	3/2	1/2
Shell #	8	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8	1	2a	2b	3a	3b	4a	4b	5a	5b		1	2a	2b	3a	3b	1

Chart C – Nucleus Fill Sequence

	Mantle														Core or Outer Core										Inner Core					Ctr
184	1	2	3	4	6	7	9	11	13	16	17	22	23	29	5	8	10	12	14	18	19	24	25		15	20	21	26	27	28
Shell #	1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8	1	2a	2b	3a	3b	4a	4b	5a	5b		1	2a	2b	3a	3b	1

Chart D – Nucleons per Spheron Shell

	Mantle														Core or Outer Core										Inner Core					Ctr
184	2	4	2	6	4	8	6	10	8	12	10	14	12	16	2	4	2	6	4	8	6	10	8		2	4	2	6	4	2
Shell #	1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8	1	2a	2b	3a	3b	4a	4b	5a	5b		1	2a	2b	3a	3b	1

Chart E – Cumulative Total Nucleons per Spheron Shell

	Mantle														Core or Outer Core										Inner Core					Ctr
184	2	6	8	14	20	28	38	50	64	82	92	126	138	184	16	32	40	56	68	100	106	148	156		70	110	112	162	166	168
Shell #	1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b	8	1	2a	2b	3a	3b	4a	4b	5a	5b		1	2a	2b	3a	3b	1

Chart C shows the series order of the nucleus fill sequence. Chart D shows the number of nucleons per layer shell. The values calculate by Pauling's formula 2j+1, where j is the spin as shown in chart B. Chart E shows the cumulative total of the nucleons per layer shell as the nucleus fills.

The equations for calculating the nuclear spin per sub shells a and b are:

$$a = s - \frac{1}{2} \tag{4.26}$$

$$b = s - \frac{3}{2} \tag{4.27}$$

where a and b belong to the shell number s. Applying the nuclear spin equations to Pauling's formula for the maximum number of nucleons in a nuclear shell we get:

$$2\left(s-\frac{1}{2}\right)+1$$
$$2\left(s-\frac{3}{2}\right)+1 \qquad (4.28)$$

Each layer of the Mantle, Outer Core, and Inner Core follows the same structural system.

If the total number (tn) of nucleons that can fit on a layer shell are

$$tn = a + b \qquad (4.29)$$

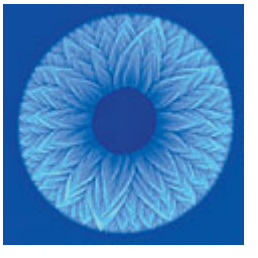
then the total number of nucleons on a layer shell can be as high as

$$tn = 4s - 2 \qquad (4.30)$$

Science of Complexity

The purpose of showing Aether numbers, the ratio of musical tones, and atomic structure in this chapter is to illustrate a few of the ways in which the Aether unit influences the structure of the physical world. No doubt, all dynamic and living processes, such as the patterns of seed development in flowers, the growth of plant structures, skeletal and extra-skeletal structures, and population growth patterns, are manifestations of Aether units.

The concept of Aether structure was introduced and quantified as the relationship of 2-spin Aether units to ½ spin onta. We show that a certain number of whole cycles produce specific geometrical structures and that these structures are themselves cyclical and appear in octaves. Images produced by Ghim Wei Ho under the tutelage of Prof. Mark Welland of the University of Cambridge Nanoscale Science Laboratory[77] share a remarkable resemblance to the purely mathematical Aether structures.



The above images were produced using chemical vapor deposition and taken with a scanning electron microscope. Notice the spike and petal

[77] Nanotechnology Now http://nanotech-now.com/Art_Gallery/ghim-wei-ho.htm: Discover, The Secret Garden, October 2004 http://www.discover.com/issues/oct-04/rd/secret-garden/

formations, two dominant Aether structures. It warrants further research to investigate the precise quantification of Aether structures and nano structures within the context of the Aether Physics Model. If the APM does accurately quantify the structure of growing things, it will not only quantify the physical Universe, but also precisely quantify the living structures within it.

> The quality of our knowledge proves itself in the quality of our lives. A knowledge constructed of concepts that identify and manipulate preestablished structures yields a world that is crowded, rigid, compressed, and impenetrable. Human suffering is built up in layers of increasing solidity, each layer a further misreading of a fluid dynamic.[78]
>
> -Tarthang Tulku

Modern physics attempts to describe the quantum structures in terms of macro structures. In our macro world, things seem solid, rigid, and impenetrable. Yet, at the quantum level of structure, the Aether Physics Model reveals a more fluid and dynamic structure for existence. When we more closely study the seemingly rigid physical world, we see it is constantly changing according to processes of growth and decay, which may exist over extremely long times. Our science would be simpler and more accurate if it reflected the true nature of existence, rather than our limited and preconceived notions of rigidity.

From this brief introduction into Aether numbers, a new branch of science emerges. It is the Science of Complexity. Given an ordered reality consisting of objects and their environment, objects can bind by the three forces and give rise to a more complex and granulated reality. The three forces of electromagnetism, electrostatics, and gravity are themselves evolved from the Gforce acting on the dimensions of onta. The electrons and protons within the environment of Aether, bind by the forces, which give rise to neutrons and atoms. The neutrons remain at the level of subatomic particles, but the atoms make up a completely new order of reality.

Whereas electrons, protons, and neutrons have two spatial dimensions, atoms have three inherent spatial dimensions. The two-dimensional onta bind to one another and the distance between them produces the third dimension of length. Thus, atoms are the true quantum particles, as they are the first order of reality within spatial, three-dimensional existence.

As the complexity of the material structures develop, so also does the complexity of the forces and environment. The strong force that binds onta becomes the Van der Waals force that binds molecules. The strong charge of the onta, when polar aligned, produces magnetism. As atoms produce molecules, they develop increasingly versatile characteristics. All

[78] Tarthang Tulku, Knowledge of Time and Space (Dharma Publishing, Dharma Press, Oakland, CA, 1990)

along, while orders of reality become more complex, the structures build in the environment of Aether. Because Aether encapsulates onta, the Aether binds as well, changing the geometry of the space-time fabric.

Therefore, force, matter, and environment progress from very simple states to states that are more complex. They become cells, organs, living beings, communities, and nations. They become minerals, rocks, mountains, planets, stars, solar systems, and galaxies. There are numerous taxonomies of complex existence spanning many orders of reality.

As we quantify and understand the progressions of complexity, computer programs will model each system at their various levels of reality and predict evolutions not before imagined. The understanding of the binding of onta, atoms, and molecules will lead to designer materials where the desired characteristics are input and computers reveal the blueprints that meet the requirements.

Endeavors such as these are possible only when the root cause of force, matter, and environment properly quantify. The physics of the 20th Century focused only on matter, was not aware of the Gforce, and neglected the Aether. Modern physics reached a dead end when protons and neutrons viewed as being two forms of nuclei. The misperception resulted that smashed nuclei revealed smaller building blocks of matter called quarks, which are mere collision effects. Scientists neglected the Aether because it presented problems regarding Einstein's Special Relativity Theory, as Aether provides the basis for an absolute reference frame. Is it mere ignorance that the Gforce remained undiscovered? Or could there be prejudice against any evidence that might support the existence of a creator God?

In any case, it takes a physics model that can explain the evolution and interaction of force, matter, and environment in order to give an accurate and true account of the Universe's existence.

The Standard Model bases upon confusion beginning with the ambiguous definitions of dimensions, which are the physical world's first order of reality. The next two chapters lay the foundations required to correct this confusion and properly present the Aether Physics Model.

Chapter 5

DIMENSIONS

A good definition of "dimension" is essential to physics. Dimension is the most elementary characteristic of both physical matter existence and non-material Aether existence. From the dimensions of length, frequency, mass, charge, and spherical geometry come Aether, primary angular momentum, and all other units of dimension.

The physical structure of the Universe that we recognize originates from Aether units and primary angular momentum. Other units make up the Universe, such as velocity, magnetic flux, resistance, potential, flow, pressure and many more. We may not be aware of it, but each one of these units is a type of reality in itself. Units are not just abstract concepts; they are a significant foundation of the physical world. It is important to understand each type of physical existence as clearly as possible. To do this we must understand the type of existence that precedes the level we are examining.

Dimension is an unfamiliar concept to ponder; yet like our heartbeat it undergirds our very existence. We are accustomed to thinking that reality is the physical world we perceive. However, if the world we perceive is real, then the molecules and atoms that make up the world must be more real, having pre-existed the more complex structures. In addition, the onta that make up the atoms must be yet more real. Moreover, as we proceed to the most fundamental existence of dimension we must approach even closer the Source of reality.

Likewise, as we progress in structure from dimensions to the reality we perceive, the structures themselves become more complicated and less like their Source, while founded on the previous levels all the same. For these reasons, as we pursue an understanding of reality at the level of dimension, the terminology must be clear.

Definition of Dimension

Dimension - (Common Definition)

In physics, dimensions is an expression of the character of a derived quantity in relation to fundamental quantities, without regard for its numerical value. In any system of measurement, such as the metric system, certain quantities are considered fundamental, and all others are considered to be derived from them. Systems in which length L, time T, and mass M are taken as fundamental quantities are called absolute systems. In an absolute system force is a derived quantity whose dimensions are defined by Newton's second law of motion as ML/T^2, in terms of the fundamental quantities. Pressure (force per unit area) then has dimensions ML/T^2; work or energy (force times distance) has dimensions ML^2/T^2; and power (energy per unit time) has dimensions ML^2/T^3. Additional fundamental quantities are also defined, such as electric charge and luminous intensity. The expression of any particular quantity in terms of fundamental quantities is known as dimensional analysis and often provides physical insight into the results of a mathematical calculation[79].

Dimension – (Aether Physics Model Definition)

According to the Aether Physics Model, the dimensions of discrete natural units (quanta) are length, frequency, mass, charge, and spherical geometry. Dimension is the fundamental attribute of measurement, but is not itself measurable. Absolute dimension is a quality of reality seemingly arising from the ultimate Source of all existence. When quantity is associated with dimension, then the two together form a measurement.

Through the lack of coherent understanding of dimensions and units, it has become standard practice to view measurements as units. For example, the kilogram defines a unit of mass[80]. It would be far more coherent if the kilogram defined a *measurement* of mass, with the definition of "unit" reserved for compound dimensions (units are defined in chapter 6). It is not so much that the choice of words is important, but that the concepts of measurements and units are quite different from one another. Using the same word to define two different concepts, which often appear in the same sentence or paragraph, easily leads to confusion.

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[79] "Dimension , in Physics," The Columbia Encyclopedia , 6th ed.

[80] "KILOGRAM abbr. kg, fundamental unit of mass in the metric system, defined as the mass of the International Prototype Kilogram, a platinum-iridium cylinder kept at Sèvres, France, near Paris. Copies of this standard are deposited at bureaus of standards throughout the world, and other units of mass are defined in terms of it." "Kilogram ," The Columbia Encyclopedia , 6th ed.

There are fewer dimensions at the quantum level than in the macro world. Like force, matter, and environment, dimensions increase in complexity as the orders of reality become more complex. Color, flavor, and texture are examples of complex dimensions as perceived at the level of human beings.

The physical world, at the quantum level, follows a very simple and easy to understand set of rules. It is much easier to understand quantum physics through the Aether Physics Model than the physics of auto mechanics or bread making because the rules are so precise and the dimensions are so few. However, the key to understanding the quantum level of existence lies in more precise and simple definitions of the terms "dimension," "measurement," and "unit."

There are four commonly known, fundamental dimensions in the MKS system of measurement: mass, charge, length, and frequency. In our macro frame of reference, we prefer to speak of frequency in terms of its reciprocal of time. Also at the quantum level there is a fifth type of dimension, spherical geometry, as explained shortly.

It is from the fundamental dimensions that units are constructed. The unit of area is equal to the length dimension squared. The unit of volume is equal to the length dimension cubed. Volume then has three dimensions of length.

$$\lambda_C^{\,3} = volm \tag{5.1}$$

However, there are also three dimensions in a unit of momentum (mass times length times frequency).

$$m_e \cdot \lambda_C \cdot F_q = momt \tag{5.2}$$

So it is more accurate to call "3D" objects "volumetric" than three-dimensional. Technically, an object with three dimensions of length is three dimensional, but three-dimensions need not mean "three dimensions of length."

Misconceptions of Mass

In a weightless environment, devoid of noticeable gravitational effects, what happens to mass? Does mass change to zero? No. When mass is near a large planet, does mass become greater? No. When an object with mass is accelerated to near the speed of light, does mass increase? No.

Nothing ever happens to mass. There is nothing to happen to. Mass is merely a dimension. Of itself, it has no material existence, although it is one of the defining qualities of material objects.

There is mass in resistance. There is mass in potential. There is mass in

energy. There is mass in angular momentum. It is all the same mass, but manifested differently. It might help to realize that there is time in units too. There is time in resistance, there is time in potential, there is time in energy, and there is time in angular momentum. You can perceive time as change, but you cannot isolate time from a unit. Similarly, you can perceive mass as inertia and length as distance, but you cannot separate the dimensions of mass and length from units. In the same way, you cannot remove the bricks from a brick building without also removing the building.

Once we stop thinking of mass as equal to matter, and realize that mass is neither physical nor is it something convertible, then it becomes easier to see what mass really is and how mass "behaves." How it behaves is not the same as the "is-ness" of mass. You cannot "put your hands" on mass. You cannot see mass. You cannot truly weigh mass (but you can weigh matter that has mass). You cannot make mass turn into energy.

The whole issue about converting energy from mass clearly reveals itself when we realize the indestructible and unchangeable nature of dimensions. You cannot convert mass, length, time, or charge. They are absolutes. *Mass is always mass.* Once again, and it will be repeated often, mass (inertia) is only a dimension.

E does not equal m

Energy is a unit. Mass is a dimension. Energy is composed of the dimensions of mass times length squared times frequency squared.

$$E = M \cdot L^2 \cdot F^2 \tag{5.3}$$

Mass is not converted to energy and energy is not converted to mass. Mass is merely a dimension from which the units are constructed. This is repetitive, but understanding mass as merely a dimension is perhaps the greatest intellectual physics challenge for most people coming out of the 20th Century.

We often refer to nuclear reactions on the Sun, nuclear power plants, and nuclear bombs as examples of mass to energy conversion. In the nuclear power plants the United States has been operating for 60 years, a high degree of precision applies to the measured amount of energy and material mass passed through the reactor. And yet, there is not one report available anywhere (that this writer was able to obtain) that presents the data from a nuclear power plant and shows that the mass of the fuel was exactly converted to energy according to $E = mc^2$. One would think that to prove Special Relativity Theory, the data from a precisely monitored nuclear power plant would provide an abundance of evidence. Nevertheless, such data apparently does not exist.

In fact, there is evidence to suggest that more energy comes out of a nuclear power plant than the mass of fuel that goes in. A Liquid Metal Fast

Breeder Reactor once operated for 25 years and produced more fuel in its byproducts than it consumed during its operation[81]. A violation of energy conservation seems to result, therefore a government employee or academic will not admit this. In practice, the scientific establishment forbids the suggestion of any violation of the energy conservation law even if the data suggest it. However, the Aether Physics Model shows that there is no violation of energy conservation, as the extra energy is angular momentum of dark matter converting to photons through the Casimir effect.

When it comes down to truth, mass cannot be converted to energy because mass is a dimension at one level of reality, and energy is a unit made up of dimensions at a different level of reality. Any theory based on the assumption that a dimension of mass converts to a unit of energy has no foundation in the Aether Physics Model.

Just as Einstein did not attempt to prove the Aether as non-existent when he presented his Special Relativity Theory, it is not necessary to prove Special Relativity Theory right or wrong while presenting a mathematically correct theory of the Aether. The Aether theory presented in this book stands on its own and has no obligation whatsoever, to support or refute Special Relativity Theory. According to the foundation principles of the Aether Physics Model, the mass/energy equivalence principle of Special Relativity Theory is a non-sequitur.

Nature of Dimensions

What causes a dimension to come into existence? Why would there be such absolute dimensions as mass, charge, length, frequency, or curved geometry? Contemplating the nature and origin of dimensions requires an ability to "see beyond" both non-material and material existence. Dimensions are truly miracles of physics.

The esotericism continues when we contemplate the interaction of dimensions. Why should mass times length times frequency equal a unit of momentum?

$$M \cdot L \cdot F = Momentum \tag{5.4}$$

The interaction of dimensions to form units is merely an empirical observation; there is presently no known explanation as to why dimensions should produce units.

Non-material units such as force have dimensions, and so does the primary angular momentum that ultimately composes physical matter. There must be something about the reality of absolute dimensions, which pre-

[81] "EBR-II is, by definition, a Liquid-Metal-Cooled Fast Breeder Reactor (LMFBR). It is cooled with molten sodium metal, its chain reaction is perpetuated with extremely energetic (fast) neutrons, and it was designed with the potential for breeding more fuel than it consumes." Argonne National Laboratory – West EBR-II: Sixteen Years of Operation (Idaho Falls, ID, Argonne National Laboratory, May 1980) 1

exists both physical matter and non-material Aether existence. Science has traditionally ignored the source of absolute dimension, taking the origin of dimensions for granted. Some scientists are even so bold as to emphatically state that humans created dimensions as a means to understanding physics. If we are to understand the Source of our existence, then we must understand the foundation of our existence, as it is, and not pretend that material reality has no metaphysical foundation.

Contemplating the level of reality where physical matter and non-material Aether appear as units of dimensions, and directing our awareness toward a more primary existence, we might experience a sense of floating. There is no-thing left to observe, yet logic tells us that some unnamed knowledge of a greater reality exists there. From this unnamed knowledge emerged dimensions, units, atoms, molecules and ultimately the world we experience. Additionally, as we bring our awareness back to our present situation, we realize that everything we experience ultimately develops from that unnamed knowledge. At a very fundamental level, we can realize a link between the knowledge of greater reality and our current situation.

There is nothing wrong or harmful about science admitting the existence of God or our relationship to God, especially when that is what the data and theory present. The closer one approaches the most fundamental levels of existence, the closer one approaches the Source of all Creation.

If in our mind we look toward the Source of dimensions, we drift toward a simpler and more unified existence. However, if in our mind we look from the various manifestations of dimensions, toward the units constructed from dimensions, the atoms constructed from units, the molecules constructed from atoms, and their macro structures, we find complexity.

Through dimensions, we fracture our perception of existence into myriad pieces, rearranging reality in a way that seemingly adds to the depth of our experience. On the other hand, because there are so many different pieces to comprehend, and our mind is only capable of one focus at a time, the world ends up becoming shallower in our perception. The more detail we identify, the less we can see at a given time. This is not to say that there is something inherently wrong about studying the complex world. The purpose of acknowledging a single, non-material source for physical existence in science is to realize that it is okay to study the path to a simpler reality, as well.

Dimensions also have a reciprocal quality. For example, the reciprocal of time is frequency. Time and frequency are related, but they are also two distinct manifestations of a given dimension.

Linear and Distributed

Along with dimensions, there is another important observation concerning

the primary state of existence. There is both a linear and distributed aspect. For example, length can be linear (a line) and distributed (a surface). Similarly, other dimensions and their reciprocals have both linear and distributed aspects.

However, it would appear that mass is specifically a linear dimension, and charge is specifically a distributed dimension. There is a constant mass to strong charge ratio for all existence, which indicates that mass and strong charge are two aspects of the same thing. Mass is the linear view of this "thing" and charge is the distributed view. This is easy to visualize by using the analogy of a sheet of paper. Charge would be the view of the paper looking at is surface, mass would be the view of the paper looking at its edge.

Furthermore, dimensions govern by math, which also has both linear and distributed aspects. Addition is a linear operator in the positive direction, while subtraction is a linear operator in the negative direction. Multiplication is distributed addition, and division is distributed subtraction.

Length and Reciprocal Length

Length is the dimension that measures distance when given a quantity. Because length is something we think about often as we walk, drive, and generally function in the world, it is easy for most people to understand. The reciprocal of length is the measurement of repeating curved lengths. We call the repeating curved lengths a wave number. The wave number is different from the wavelength. A wavelength defines as the distance between two consecutive common features of a wave (peak to peak, or trough to trough for example). The wave number is the reciprocal of the wavelength.

Just as frequency is cycles per time, wave number is cycles per length. A bicycle wheel with a certain radius appears as having a certain wave number for a given distance. Change the radius of the wheel (its amplitude) and the wave number will change accordingly. In general, if the wave number increases, then the amplitude decreases, although this is not a strict rule since other factors can affect the amplitude of a wave. The unit of wave number in the MKS system of units is cycles per meter.

Single Dimension Length

When the dimension of length denotes a quantity, then we have a measurement for distance. The single dimension of length represents as a line. Although a ruler generally has four edges plus a top and bottom totaling about 12 edges with length, we are only concerned with a single edge of the ruler, which is a graduated line. To clarify the concept of length as dimension we could say that a measurement with length dimension measures distance. It would be better to avoid saying that we are "measuring length."

Because space-time as we perceive it is a direct result of the Aether, length and time are inseparable. Since length and time in the Aether are inseparable, the speed of light is constant. The speed of light is equal to the quantum distance times the quantum frequency. At the quantum level, length can be expressed in terms of frequency (reciprocal time) just as frequency can be expressed in terms of length (usually called "wavelength").

Distributed Dimension Length

Length in two dimensions is distributed. Specifically, the lengths are at right angles to each other. We normally call distributed length an area. The physical manifestation of an area is a surface. A plane is a special case of a distributed area that occurs on a flat surface. However, distributed area can also occur on curved surfaces such as toroids and spheres. Even though a surface curves, the length dimensions are still at right angles to each other.

Three Dimensional Length

We often refer to three dimensions of length as "three dimensional." As with distributed length, all three length dimensions are at right angles to each other. We call these three right-angled length dimensions a volume. The physical manifestation of a volume is space.

Three dimensions of length can also be two length dimensions at a right angle over a curved surface with the third length dimension extending to another curved surface. In other words, we would normally think of the third dimension of length as extending inward to the center of the sphere or toroid (as in a solid), but at quantum levels the third dimension of length extends outward from the surface, and between two identical toroids. For example, the double cardioid unit has the appearance of two adjacent cardioids separated by a distance. An instance of this double cardioid geometry manifests in the binding mechanics between onta.

Quantum matter has only two dimensions of length, that is, it only has surface characteristics. There is no solid quantum matter. Distance between surfaces provides the third dimension of length resulting in the appearance of "solid matter" as we perceive it at the macro level of existence.

Time and Reciprocal Time

When the dimension of time denotes a quantity, it becomes a measurement of intervals. We are accustomed to viewing time as the normal manifestation of the time dimension, with frequency as its reciprocal. At the quantum level, it appears to be just the opposite.

We perceive time as normal and frequency as the reciprocal because onta move only in the forward dimension of time. In reality, the onta are acting like "time diodes." What we really see is a pulsed forward motion

of time, not unlike a pulsed DC current produced by a rectified AC current. Since all subatomic matter pulses to the same rhythm in forward time, time appears linear to our perception.

While visualizing forward and backward time, it is possible to see how time and space curve so that distributed time appears spherical and space appears as a loxodrome over the surface of spherical distributed frequency. Once again, this geometry can only be seen from beyond the material world (such as through visualization in meditation). When the material world is viewed from within the material world, i.e., from the body's senses, we are viewing from half-spin perspective and can see only three dimensions of space and one dimension of pulsed, linear time (normally called 4D reality).

Usually frequency represents as a sine wave drawn on a flat surface (such as the surface of paper or a computer screen). This is just an artifact of the representation of frequency as a line. Frequency at the quantum level is not the up and down line we see in a cross section of a wave on the surface of a fluid. Quantum frequency is strictly an artifact of time dimension, not length dimension.

Think of it this way. Length has two directions. There is length extending in one direction, and if the point of reference turns 180 degrees, length has a second direction. Similarly, frequency has two directions. There is time toward the future, and time toward the past. However, frequency, unlike length, is dynamic. Therefore, frequency is circular in that it constantly moves with a certain spin toward the future and then curves around toward the past, and curves around toward the future, etc. In reality, there is no future or past, only the present. Nevertheless, there is the illusion of moving toward the future because our physical world arises from matter that cannot "see" the backward time direction.

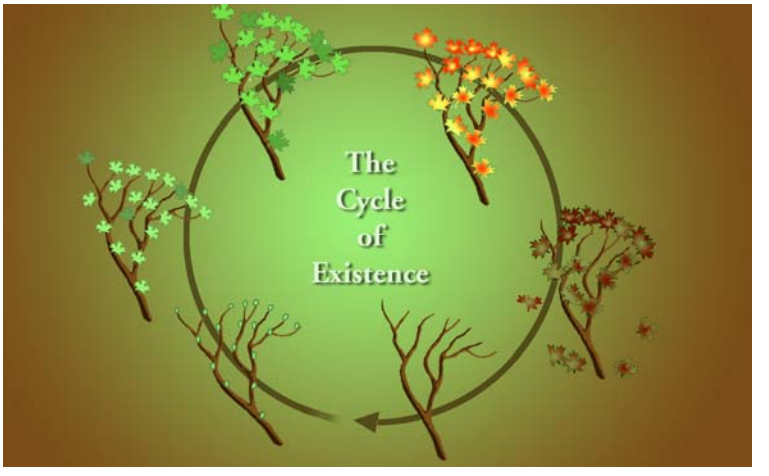
This in no way prevents the forward time direction from exhibiting apparent changes totally within the context of forward time. A swinging pendulum alternates between two directions. This alternation of direction manifests as a variable velocity. The variable velocity is a result of the changing time dimension within the velocity of the pendulum and is not the result of the quantum time dimension of the onta from which the pendulum constructs.

So although frequency can be represented by a line on a surface (such as a graph) for systems occurring within the forward-pulsed, linear time dimension, the frequency of forward and backward time cannot be accurately depicted on paper. Even so, for conveying the concept of forward and backward time, we will attempt it in our drawings.

Single Dimension Time

Single dimension time is linear time. We quantify linear time with clocks, calendars, and similar devices. Duration is associated with growth and

decay, and determines the boundaries of birth and death. For example, a tree begins life at a specific time, duration marks the tree's growth and decay, and it dies at a specific time. All physical objects (and the concepts about the physical objects) appear to come into existence at a specific moment, to have a period of growth and decay, and then to cease to exist at a specific moment.



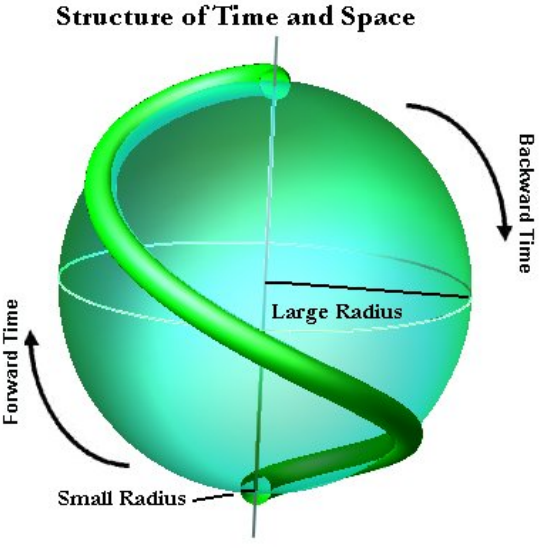
Regarding measurements of time it would enhance our understanding to speak rather of "interval," "duration," "moment," and similar references to time measurement, reserving "time" as a term for "time as dimension" when possible.

FREQUENCY

The reciprocal of time is frequency. Single dimension frequency curves. We measure frequency as cycles per time. When frequency manifests in a graph, it usually depicts as a circle or a sine wave. The continuous sine wave depiction (like a snake) is merely an artifact of convenience to show the various cycles without overlapping them. In reality, quantum frequency cycles forward and then cycles backward in a circular "path."

It is helpful to realize that there are various qualities for which frequency is measured. For example, a radio wave's frequency is a measurement of alternating electromagnetic potentials. A sound wave's frequency is the measurement of alternating molecular pressures. These examples of frequency are not frequencies of forward and backward time, but of increasing and decreasing potentials and pressures.

At the quantum level, length and frequency are not separate. Each is an aspect of the same quantum velocity. Length in its first two dimensions curves. The first dimension of curved length comes from the ligamen circulatus. The second curved length comes from the direction the ligamen circulatus moves about the spherical resonance of frequency squared. Together the two curves produce the small and large radius of the onta as shown in the image on the adjacent page.



As noted in the discussion of single dimension length, quantum length and quantum frequency (reciprocal time) are different perspectives of the same entity. Length and frequency unite as evidenced by the constant speed of light and the Aether unit geometry. At the quantum level, length expresses in terms of frequency, and frequency expresses in terms of length.

The sameness of length and frequency is due to motion (velocity) being a primary characteristic of existence from which the dimensions of length and frequency arise. In the Aether Physics Model, the speed of light is as much a quality of the Aether as is the Aether's conductance, permeability, and permittivity.

Distributed Time

Distributed time appears to be a form of reciprocal resonance. This can be seen from the expression of inductance times capacitance:

$$indc \cdot capc = time^2 \tag{5.5}$$

where time is equal to the quantum time constant $\left(time = 8.093 \times 10^{-21} sec\right)$. Single dimension time has a linear characteristic, just as all single dimensions do. Distributed time is the set of all time points generated by two perpendicular time lines. A real world example of distributed time is the orbital period of planets, as in Johannes Kepler's third law:[82]

[82] Added the meaning of time squared 9/18/5.

$$T^2 = \frac{4\pi^2}{GM} a^3 \tag{5.6}$$

where T is time, G is the gravitational constant, M is the mass of a large body, and a is the semi major axis of an elliptical orbit or radius of a circular orbit. Using quantum measurement analysis, we see that the $4\pi^2$ term, although empirically derived, is anomalous.

$$T_q^{\,2} = \frac{1}{G \cdot m_a} \lambda_C^{\,3} \tag{5.7}$$

Distributed Frequency

Distributed frequency is similarly structured. The equation for determining the resonance of a tank circuit where the potential is highest is:

$$\frac{1}{2\pi\sqrt{LC}} = F \tag{5.8}$$

and this is the same as:

$$F^2 = \frac{1}{4\pi^2 LC} \tag{5.9}$$

Frequency squared is thus resonance.

At the quantum level, dynamic distributed frequency has two components, the forward/backward frequency dimension, and the right/left spin-direction frequency dimension. As the LC follows the spin position path, it exists in not only forward/backward time, but also right/left spin. The combination of these two quantum frequencies produces quantum resonance.

Frequency squared appears in the double cardioid constant, rmfd constant, Newton gravitational constant, and many others. The double cardioid constant appears to be the quantum constant of "space-time." Space-time[10] is a term representing three dimensions of length and one dimension of time. However, the Aether Physics Model shows that there are actually three dimensions of length and two dimensions of dynamic frequency. If frequency squared is truly a resonance, then five-dimensional "space-time" should really define as "space-resonance."

One might ask, if resonance were spherical in nature, why hasn't this observation shown up in resonance research? Perhaps it has. In the late 1800s, John Worrell Keely used the mechanical vibration of multiple tuning forks to create ultrasonic frequencies inside spherical containers. By finding the resonance of a given object, such as water, Keely demonstrated the disintegration of the object into its constituent atoms

or molecules, or perhaps generated Magnegas as explained by Santilli[83]. Furthermore, modern experiments with high amplitude sound resonance show that the resonant cavities are spherical in geometry.

Another manifestation of frequency squared is the discovery of Fourier and Gabor transforms. By converting the time domain of a given data set into a frequency domain, very useful information obtains for analysis purposes. It seems rather odd that data has to convert from the time domain to the frequency domain in order to obtain this usefulness. It seems more likely that if we measured the data in the frequency domain to begin with, the secondary process of converting the data would not be necessary. Understanding the difference between frequency and resonance would help considerably in devising the proper measuring device. Acquiring data directly and in real time in its proper frequency domain could revolutionize the oscilloscope and provide engineers with unprecedented monitoring equipment.

Static Frequency

Just as length has two quantum structural dimensions and an implied third dimension between quantum structures, frequency has two dynamic dimensions and an implied third static dimension. The third dimension of frequency is the electrostatic charge.

In the Aether Physics Model, Aether units model with dipoles. The electrostatic charge dipole produces from the dynamic forward/backward time and right/left spin frequencies. The two-spin structure of the Aether is the underlying cause of the dipoles, creating both a positive and negative electrostatic charge.

Mass and Reciprocal Mass

Mass, given a quantity, is a measurement of inertia. A layperson might think that mass is a measurement of weight, but weight is dependent on the force of gravity.

Mass is one of the dimensions of primary angular momentum, which in turn is the building block of physical matter. We are quite familiar with the way the mass measurement of matter results in the sensation of weight near the surface of the Earth. However, mass is also a dimension in momentum, force, pressure, resistance, potential, magnetic flux, and several other units. It is especially important, since physicists have incorrectly equated mass with energy for the past 100 years, to understand the difference between mass as dimension, mass as measurement, and the various poetic uses of the word "mass."

In Special Relativity Theory, mass converts to energy as an object approaches the speed of light. If this were true, then instead of having infinite mass

[83] Santilli, Rugerro http://www.magnegas.com/

as the theory proposes, a spaceship should be massless at the speed of light. However, if the spaceship were massless at the speed of light, then it would have no energy because the mass would be zero. I do not see how physicists could have ignored this simple contradiction for 100 years. No doubt, the die-hard relativists will come out swinging with arguments that there is relativistic mass, which is different from rest mass, or some other such nonsense. Mass is ultimately only a dimension. Mass is not equal to matter. Mass does not rest and mass does not move as an independent entity. There is no such physical "thing" as mass that can be converted to energy, of which energy itself is merely a unit.

Only by playing tricks with words and violating the rules of equalities could mass ever be construed as being equal to energy.

The reciprocal of mass is difficult to describe. One definition of reciprocal mass could be the reciprocating action of a piston. Although with a piston, the mass is actually constant and the velocity is changing along with its direction. Reciprocal mass would suggest that reciprocal action occurs directly at the level of inertia. Perhaps through a curved geometry, inertia oscillates between a positive and negative value.

Within the Newton gravitational constant, the mass associated with the Aether is reciprocal to normal mass. When we take the reciprocal of time, we get frequency, which is a completely different manifestation of time. A dimension and its reciprocal are related, but they are not the same.

The mass associated with the Aether is an enormous $3.268\times10^{15}kg$. So why do we not perceive such a large mass? Would not our space-time feel very dense and solid? If we contemplate the apparent enormity of the Aether mass compared to the masses of the electron and proton, it becomes apparent that Aether mass must be reciprocal to onta mass. In the gravitational constant, the mass of the Aether is, in fact, reciprocal.

$$G = \frac{\lambda_C{}^3 \cdot F_q{}^2}{m_a} \tag{5.10}$$

Then, how would we explain the mass of the Aether in Coulomb's constant?

$$k_c = \frac{m_a \lambda_C{}^3 F_q{}^2}{e_a{}^2} \tag{5.11}$$

It may be that charge per mass is the actual expression for electromagnetism. In Coulomb's constant, the dominant charge dimension is then reciprocal. The presence of the Aether mass in the numerator then explains why greater relative forces than mass act on electrostatic and electromagnetic charges.

We can hypothesize that mass associated with the Aether has reciprocal mass compared to the mass of onta. Reciprocal Aether mass would be oscillating between positive and negative inertia and thus have an apparent zero net mass. This reciprocal mass would explain why the Gforce both pulls and pushes, thus generating resonance within the Aether unit.

Therefore, the Gforce is not a physical force of push or pull, but is a different type of force manifestation. Its reciprocal mass nature imparts the *ability* to push or pull. The use of a bathroom scale illustrates the point. Standing on the scale, we can feel force between our feet and the scale. We normally perceive this force as weight, not gravity. The sensation of weight is not the sensation of gravity, as gravity is not a sensation, but rather it is the ability to impart force between two masses.

Similarly, the Aether mass density, although very large, is not the physical type of mass density we associate with matter. Rather, it is the *ability* to impart mass density. The same treatment would apply to all Aether related units of dimensions. When we contemplate the nature of "ability," the implication is that there is a living, dynamic cause involved.

Single Dimension Mass

Mass is linear and exists only as a single dimension. In the case of onta, whenever two dimensions of mass are present in a unit, it is because the unit is the result of two separate onta interacting with each other.

Because mass is linear, it exists with just one dimension of length when associated with matter. Matter at the subatomic level exists as primary angular momentum. Primary angular momentum is equal to a circular line of mass (ligamen circulatus) spinning a velocity perpendicular to the circle. The angular momentum of the electron is the "quantum of action" also known as Planck's constant.

The effect of the spinning ligamen circulatus is to scan an area at the quantum frequency. However, there appears to be no direct correspondence between the mass and the length of the ligamen circulatus' circumference. As will be seen in the section on electron radii (page 181), the ligamen circulatus circumference can shrink or grow as long as the spherical frequency radius of the Aether unit grows or shrinks in such a way as to conserve angular momentum. Regardless of what circumference the ligamen circulatus takes, the mass for that particular onn appears to remain constant.

It is often wondered why gravity is only an attractive force. If the APM concept of the photon is correct, and if it composes of electron angular momentum equally divided between the electron and positron spin positions, then we can attribute the lack of measurable photon mass to neutralized inertial spin parity. Just as reciprocal mass is the oscillation between positive and negative inertial mass, the left-hand spin of the

electron portion of the photon inertia counters the right-hand spin of the positron portion of the photon inertia. Even as positive proton charge neutralizes negative electron charge when producing the neutron, the negative inertia portion of photon angular momentum neutralizes the positive inertia portion of angular momentum.

This would imply that matter and anti-matter would experience gravity as a mutual repulsion, rather than a mutual attraction. The electron would repel the positron and we can assume that the proton would repel the anti-proton. We can further assume that the spin positions being only half-full allows for the co-existence of matter and anti-matter in the same Aether unit, as the matter and antimatter will not come into direct contact.

This would further imply that if the distribution of matter and anti-matter is equal throughout the Universe, then not only would anti-matter be annihilated by matter, but it would gravitate away to form an entirely separate anti-matter system. Evidence, which we might interpret as positrons gravitationally repelling from normal matter, appears at the Galactic Center[84]. Yet, because the gravitational force is considerably weaker than the electromagnetic and electrostatic forces, interstellar collisions between matter and anti-matter do frequently occur and thus a system tends to predominate as toward either matter or antimatter. Only at intergalactic distances are we likely to observe predominantly antimatter systems.

Charge and Reciprocal Charge

Charge, when given a quantity, is the measure of electricity. The Aether unit donates elementary charge to the onn, while the strong charge of the onn is the product of onn angular momentum times the conductance of the Aether.

Since strong charge results from the ligamen circulatus spinning through Aether at the speed of light (quantum length times quantum frequency), strong charge will always be proportional to the onn mass. Elementary charge will always be a portion imparted by the Aether and therefore the elementary charge of the electron, positron, proton, and anti-proton will always be of the same magnitude.

Since strong charge is the product of angular momentum times conductance, and conductance is a quality of the Aether, this may imply angular momentum can exist outside of the Aether. Indeed, the neutrino appears to be an example of angular momentum existing outside of the Aether and in which strong charge is absent.

[84] Dermer, C. D. and Skibo, J. G., *Annihilation Fountain in the Galactic Center Region* (The Astrophysical Journal, 487 :L57–L60, 1997 September 20)

Single Dimension Charge

There is no physical manifestation of single dimension charge, however due to the distributed and curved nature of charge, when charges multiply only the square root of each charge is used (single dimension of charge). For example, in the electrostatic law (Coulomb's law):

$$k_C \frac{\sqrt{e^2} \cdot \sqrt{e^2}}{\lambda_C{}^2} \frac{2\pi}{\alpha} = forc \tag{5.12}$$

The lack of a single dimension manifestation of charge supports the concept of derived charge. Mass exists as a single dimension. Nevertheless, the cause of distributed strong charge is the scanning of the ligamen circulatus (angular momentum) through the Aether.

The single dimension charge as used in Classical Mechanics is one of the reasons why the Standard Model cannot produce a Unified Force Theory. The use of a single dimension of charge in Classical Mechanics also causes the incorrect relationship between resistance and conductance as well as between capacitance and potential. We explain the correct relationships of these units later.

Distributed Dimension Charge

All charge is distributed[85]; that is, all charge distributes over a surface. There are two manifestations of distributed charge, namely, electrostatic charge associated with the elementary charge (solid angle of 1), and electromagnetic charge associated with the strong charge (solid angle of $\frac{1}{4\pi}$).

The Aether unit donates electrostatic charge to the onn as the ligamen circulatus spins through it. The solid angle geometry of the electrostatic charge comes from the spherical distributed frequency dimensions of the Aether unit (forward/backward time and right/left spin direction).

Electromagnetic charge and the angular momentum of the onn are the same entity, but seen from different perspectives. As the linear ligamen circulatus of the onn spins through the Aether unit, it scans an area. The scanned area represents the electromagnetic charge of the onn. The toroidal geometry of the electromagnetic charge arises from the circular mass moving in a circular path around the spherical frequency dimensions of the Aether unit. Although the electromagnetic charge would look helical to "God's eyes," it looks like a cardioid when viewed through our half-spin-onn senses.

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[85] "Above all, Coulomb confirmed by very refined methods the fact already noticed by Gray, that electricity is only situated on the external surface of conductors; and he observed that this also is a consequence of the inverse square law, and can only be true if the latter holds exactly." Philipp Lenard, Great Men of Science: A History of Scientific Progress, trans. H. Stafford Hatfield (New York: The Macmillan Company, 1933) 157-8.

All charge dimensions are distributed. In some units, such as resistance, charge appears as $coul^4$. When charge dimensions appear to the fourth power, the unit involves the interaction of two onta.

Geometry

The presentation of time and space in terms of curvature implies that curved geometry is inherent to Aether. In the Aether Physics Model, the dimensions of frequency squared support the curved geometry of Aether. In this sense, curved geometry could interpret as a "fifth type of dimension."

Spherical Constant

4π appears frequently in the quantum constants and is an essential quantity in quantum physics. 4π will appear when the expression on one side of an equation has steradian angle and the expression on the other side has a solid angle of 1. The solid angle of 1 refers to spherical charge and the steradian angle $\left(\frac{1}{4\pi}\right)$ refers to toroidal charge. 4π will also appear when referencing the geometrical constant of the unit. The geometrical constant applies to the angular momentum and the solid angle applies to the charge. Both charge and angular momentum share curved geometry, but manifest in distinct dimensions.

4π is a dimension within the Aether unit and appears when we look at the relationships among the constituent constants. 4π appears with the permeability, permittivity, inductance, and capacitance units, such as when expressing *permeability* in quantum measurements:

$$\mu_0 = \frac{m_a \cdot \lambda_C}{4\pi \cdot e_a^{\,2}} \tag{5.13}$$

It also appears as a dimension when expressing *permittivity* in terms of quantum measurements:

$$\varepsilon_0 = \frac{4\pi \cdot e_a^{\,2}}{m_a \cdot \lambda_C^{\,3} \cdot F_q^{\,2}} \tag{5.14}$$

Similarly, inductance is equal to:

$$indc = \frac{m_a \cdot \lambda_C^{\,2}}{4\pi \cdot e_a^{\,2}} \tag{5.15}$$

and capacitance is equal to:

$$capc = \frac{4\pi \cdot e_a^{\,2}}{m_a \cdot \lambda_C^{\,2} \cdot F_q^{\,2}} \tag{5.16}$$

As mentioned earlier, Charles Coulomb was not aware of the constant that bears his name when he was discovering the force law for electrostatic charge. Through some fortunate event, early physicists developed the cgs system of measurements such that charge expresses entirely in terms of the dimensions of length, frequency, and mass. In the cgs system of measurements, Coulomb's constant is equal to 1. When we convert the constants of permeability, permittivity, and conductance to cgs units, the importance of 4π becomes clearer.

$$\mu_0 = \frac{4\pi}{c^2} \tag{5.17}$$

$$\varepsilon_0 = \frac{1}{4\pi} \tag{5.18}$$

$$Cd = \frac{c}{16\pi^2} \tag{5.19}$$

In cgs units, the $rmfd$ constant converts to:

$$rmfd = 16\pi^2 \tag{5.20}$$

In cgs units, permeability, permittivity, conductance, and rotating magnetic field (Aether unit) expresses solely in terms of the 4π spherical constant and the speed of light, showing that Aether is a function of motion, much as the ancient philosophers taught[86].

Not only is the Aether a function of spherical geometry and the speed of light, but the fact that charge expresses entirely in terms of mass, length, and frequency dimensions shows that charge is indeed a derived dimension. The observation of derived strong charge supports the Aether Physics Model concept that strong charge is equal to angular momentum times Aether conductance.

4π in Unified Charge Equation

The Unified Charge Equation notates as:

$$e^2 = {e_{e\max}}^2 \cdot 8\pi\alpha \tag{5.21}$$

or

$$\frac{e^2}{{e_{e\max}}^2 \cdot 2 \cdot 4\pi \cdot \alpha} = 1 \tag{5.22}$$

Elementary charge $\left(e^2\right)$ is spherical as it is donated to the onta from the

[86] "The history of science illustrates continuity nicely with Descartes's plenum, a space where aether particles are always in motion and there are no empty interstices. " Paul Ilie, The Age of Minerva, vol. 2 (Philadelphia: University of Pennsylvania Press, 1995) 29

spherical distributed frequency dimensions of Aether, thus the elementary charge has a solid angle of 1. Strong charge ($e_{emax}{}^2$) is always a steradian of spherical charge, regardless of the shape the electron angular momentum takes.

The strong charge has half-spin, because the angular momentum that produces strong charge can only move in forward time. And since the elementary charge comes from a 1-spin Aether sphere, 2 must multiply the half-spin strong charge in order to be equal in spin to the elementary charge.

In order to convert strong charge steradian geometry to electrostatic spherical geometry, the strong charge must multiply by 4π.

The fine structure constant (α) is the proportion by which the strong charge must multiply in order to bring the elementary charge sphere and equivalent strong charge sphere into unity. Therefore, it appears that *conservation of charge geometry* is another conservation law of physics. (See page 204 for more details about spherical and steradian units).

Distributed Spherical Constant

The distributed spherical constant $(16\pi^2)$ appears in the quantum Aether unit of rotating magnetic field ($rmfd$).

$$4\pi \cdot 4\pi = 16\pi^2 \tag{5.23}$$

$$rmfd = 16\pi^2 \cdot k_c \tag{5.24}$$

The full, 2-spin rotating magnetic field is not just a single magnetic field spinning in one direction. In the five dimensional perspective, it is a bi-directional tubular loxodrome shaped electromagnetic charge tracing first in one time direction, and then in the opposite time direction. In the four-dimensional perspective, the rotating magnetic field would appear as a spinning tubular toroidal, or cardioidal, shaped electromagnetic charge spinning in one time direction (forward time), as we could not see the backward time direction. Our inability to see the backward time direction does not negate its effect or presence.

There are three manifestations of the rotating magnetic field. There is the two-spin manifestation, which is the full Aether unit with the geometrical constant of $16\pi^2$. There is the half spin manifestation of a single onn. Then there is the one-spin manifestation of rotating magnetic field, which applies when two onta bind together. One spin rotating magnetic field has a geometrical surface constant equal to the toroidal onn ($4\pi^2$) times 2, because there are two onta spinning oppositely in a binding:

$$4\pi^2 \cdot 2 = 8\pi^2 \tag{5.25}$$

Therefore, the one-spin geometrical constant is equal to $8\pi^2$.

Chapter 6

UNITS

Redefining units in terms of distributed charge and quantum measurements.

The Aether Physics Model constructs units with quantum measurements, as opposed to arbitrary or macro structure-based measurements such as meters, Earth revolutions, etc. Quantum measurements provide a whole number of units for a quantum process or structure. For example, the primary angular momentum of one electron moving at the speed of light determines the unit of one quantum photon. Thus, there is a discrete relationship between the activity of electrons and the production of photons.

Constructing units from quantum measurements provides for easy comprehension of quantum processes. Quantum physics, nanoscience, and chemistry would clearly benefit from this new system of units.

Quantum Units

There are essentially two stable forms of matter in our part of the Universe, the electron and the proton. The neutron is a composite onn produced when a proton binds with an electron. The photon comes into being when an atom absorbs excess primary angular momentum radiated from other atoms. (see Photon Mechanics, page 223).

Since almost all controllable physical processes occur through interactions between the electron and photon, the quantum measurements of the *electron* usually define the quantum units. As noted in Quantum Measurements on page 22, the electron quantum measurements are:

- Quantum Length: $\lambda_C = 2.426 \times 10^{-12}\, m$
- Quantum Frequency: $F_q = 1.236 \times 10^{20}\, Hz$
- Quantum Mass: $m_e = 9.109 \times 10^{-31}\, kg$
- Quantum Strong Charge: $e_{e\max}{}^2 = 1.400 \times 10^{-37}\, coul^2$

- Quantum Electrostatic Charge: $e^2 = 2.567 \times 10^{-38} coul^2$

The quantum *length* is equal to the Compton wavelength, the quantum *frequency* is equal to the speed of light divided by the Compton wavelength, quantum *mass* is the mass of the electron as measured by NIST, the quantum *strong charge* is the calculated strong charge, and the *electrostatic charge* is the elementary charge (as measured by NIST) squared.

This chapter defines only a few quantum units. Other quantum units appear in Appendices I and II.

Converting Charge Dimensions

There are two important differences between quantum measurement units and standard units with regard to the charge dimensions. Charge dimensions always distribute, and almost all charge dimensions express in terms of strong charge, as opposed to elementary charge.

Concerning distributed charge, the situation is somewhat complicated by the fact that five standard units are already in the correct dimensions of distributed charge. These units are permeability, permittivity, inductance, capacitance, and conductance.

Inductance is equal to the permeability of the Aether divided by length, and similarly, capacitance is equal to permittivity of the Aether divided by length. (In the cgs system of units, units of length [cm] express inductance and capacitance).

So the units of inductance and capacitance already express in terms of distributed charge as follows:

$$capc = 2.148 \times 10^{-23} \frac{sec^2 coul^2}{kg \cdot m^2} \tag{6.1}$$

$$indc = 3.049 \times 10^{-18} \frac{kg \cdot m^2}{coul^2} \tag{6.2}$$

All other electrically related units from Classical physics incorrectly express with single dimension of charge. Further, the Standard Model has usually described the electrical units in terms of elementary charge. Since the Aether donates it, elementary charge has nothing to do with the action of onta in nearly all cases (magnetic moment is an exception). In almost all cases, the strong charge of the onta is the active charge of the unit.

The strong charge is polar and behaves, in fact, like a tiny magnet. The strong nuclear force, permanent magnetism, electromagnetism, the Casimir effect, Van der Waals forces… each of these is the action of the strong charge in a different situation.

In the case of resistance, where the standard unit in Classical physics appears to have distributed charge, there is a double distributed charge in the quantum dimension system of units, because resistance is a measurement of the action of two opposing onta colliding with each other. Therefore, the strong charge is that of both onta experiencing the resistance.

The table below shows some units from Classical physics and the equivalent in the quantum measurement units.

	Aether Physics Model	**Classical Physics**
Resistance	$resn = \frac{m_e \lambda_C{}^2 F_q}{e_{emax}{}^4}$	$R = \frac{kg \cdot m^2}{sec \cdot coul^2}$
Potential	$potn = \frac{m_e \lambda_C{}^2 F_q{}^2}{e_{emax}{}^2}$	$V = \frac{kg \cdot m^2}{sec^2 \cdot coul}$
Current	$curr = e_{emax}{}^2 F_q$	$I = \frac{coul}{sec}$
Magnetic Flux	$mflx = \frac{m_e \lambda_C{}^2 F_q}{e_{emax}{}^2}$	$\lambda = \frac{kg \cdot m^2}{sec \cdot coul}$
Conductance	$cond = \frac{e_{emax}{}^2}{m_e \lambda_C{}^2 F_q}$	$G = \frac{sec \cdot coul}{kg \cdot m^2}$

The usual rule for converting to quantum units from MKS units is to replace each dimension with its quantum measurement counterpart. When it comes to the charge dimension, replace each single dimension of charge with $e_{emax}{}^2$. With the inductance, conductance, and capacitance units, the exponent of the charge dimensions remains unchanged. The other exception is with magnetic moment; the charge involves both $e_{emax}{}^2$ and e^2.

Magnetic Moment

Magnetic moment is a unit that measures the influence of the Aether's electrostatic charge against the strong charge of the onn.

The magnetic moment of the electron as defined by NIST is:

$$\mu_e = -928.476\ 362 \times 10^{-26}\ \text{J T}^{-1} \tag{6.3}$$

The NIST value of electron magnetic moment expresses in terms of quantum measurements as:

$$\mu_e = g_e \lambda_C{}^2 F_q \frac{e \cdot e_{emax}{}^2}{8\pi \cdot e_{emax}{}^2} \tag{6.4}$$

where the g_e is the electron g-factor as measured in the Lamb Shift. In the electron unit of magnetic moment, the strong charge cancels out, since the electrons are acting on electrons. Nevertheless, the strong charge terms belong in the equation in order to show that electrons are acting against other onta in the following NIST measured magnetic moment values.

The g-factor is an essential value related to the magnetic moment of the onta, as it corrects for the precession of the onn.

The NIST value for the proton magnetic moment is:

$$\mu_p = 1.410\ 606\ 633 \text{ x } 10^{-26} \text{ J T}^{-1} \tag{6.5}$$

The NIST value of proton magnetic moment expresses in terms of quantum measurements as:

$$\mu_p = g_p \lambda_C{}^2 F_q \frac{e \cdot e_{emax}{}^2}{8\pi \cdot e_{pmax}{}^2} \tag{6.6}$$

where the proton g-factor is 5.58569 as listed on NIST. $e_{pmax}{}^2$ is the electromagnetic charge of the proton, $e_{emax}{}^2$ is the electromagnetic charge of the electron, and e is the elementary charge.

The NIST value for the neutron magnetic moment notates as:

$$\mu_n = \text{-}0.966\ 236\ 40 \text{ x } 10^{-26} \text{ J T}^{-1} \tag{6.7}$$

and can be expressed as:

$$\mu_n = g_{n-nist} \lambda_C{}^2 F_q \frac{e \cdot e_{emax}{}^2}{8\pi e_{pmax}{}^2} \tag{6.8}$$

where g_{n-nist}, the g-factor of the neutron, is -3.82608545 as defined by NIST, $e_{pmax}{}^2$ is the electromagnetic charge of the proton, $e_{emax}{}^2$ is the electromagnetic charge of the electron, and e is the elementary charge. Notice that the equation balances by use of the strong charge of the proton instead of the neutron. This is highly unlikely.

I am confident that the data used by NIST to produce these magnetic moment constants must be correct, as the equations above can be expressed in terms of quantum units (and g-factors). However, it appears that the data for the neutron was misread, or the value for neutron g-factor was simply miscalculated. That the neutron magnetic moment depends on the proton strong charge, and hence on the proton mass, seems impossible.

The above analysis also shows rather conclusively that all charge should distribute, including the elementary charge. Based on Charles Coulomb's observation that all charge must distribute in order for the force laws to work, and for consistency with the Aether Physics Model, we transpose the magnetic moment electrostatic charge dimensions. The electron magnetic moment in the APM system is:

$$emag = g_e \lambda_C{}^2 F_q \frac{e^2 \cdot e_{emax}{}^2}{8\pi \cdot e_{emax}{}^2} \tag{6.9}$$

The proton magnetic moment in the APM system is:

$$pmag = g_p \lambda_C{}^2 F_q \frac{e^2 \cdot e_{emax}{}^2}{8\pi e_{pmax}{}^2} \tag{6.10}$$

And based on the NIST values for the neutron magnetic moment in the Standard Model, the neutron magnetic moment would be:

$$nmag = g_{n-nist} \lambda_C{}^2 F_q \frac{e^2 \cdot e_{emax}{}^2}{8\pi e_{pmax}{}^2} \tag{6.11}$$

However, it is highly unlikely that nature has given a magnetic moment to the neutron, due to the strong charge of the proton. So assuming the accuracy of the magnetic moment, correcting the quantum measurements changes the g-factor for the neutron:

$$nmag = g_n \lambda_C{}^2 F_q \frac{e^2 \cdot e_{emax}{}^2}{8\pi e_{nmax}{}^2} \tag{6.12}$$

The g-factor for the neutron must be -3.831359 if the neutron magnetic moment measurement is accurate.

From the expressions of magnetic moment in the Aether Physics Model, it appears that magnetic moment physically manifests by the interaction of the electrostatic and electromagnetic charges within each onn. It is further apparent that the electron plays a key role in causing magnetic moment for each of the onta.

Comparing Magnetic Moments

Comparing the proportions of the NIST values to the APM values for the magnetic moment constants it appears that:

$$emag = \mu_e \cdot e \tag{6.13}$$

$$pmag = \mu_p \cdot e \tag{6.14}$$

$$nmag = 0.999999\mu_n \cdot e \tag{6.15}$$

Since the electron and proton magnetic moments can be calculated exactly by applying quantum measurements, and since the APM neutron magnetic moment is calculated using quantum measurements, it is likely that the above neutron magnetic moment error lies with the NIST value.

Based on the minor adjustments noted above, the actual value of neutron magnetic moment as calculated in the Standard model would be:

$$\mu_n = -3.831359\lambda_C{}^2 F_q \frac{e \cdot e_{emax}{}^2}{8\pi e_{emax}{}^2} \tag{6.16}$$

$$\mu_n = -0.96623410 \times 10^{-26} \frac{\mathrm{m}^2\mathrm{coul}}{\mathrm{sec}} \tag{6.17}$$

But whether this value of magnetic moment is useful or not would depend on how the equations used by NIST evolved. If other adjustments compel compensation for the errors in the NIST constant, then the NIST formula will have to re-adjust as well.

Notice that each quantum measurement expression of magnetic moment includes the weak interaction constant of 8π. In addition, each magnetic moment unit resolves to a relationship between electrostatic and electromagnetic charge. This indicates that the unit of magnetic moment directly relates to the dynamics of the weak nuclear interaction.

Changes

Some equations and laws need adjustment due to the new Aether Physics Model system of quantum measurement units, which bases on distributed charge. For example, in the Standard Model, capacitance defines as charge divided by potential.

$$C = \frac{Q}{V} \tag{6.18}$$

However, in the Aether Physics Model all charge distributes, as Charles Coulomb pointed out. Capacitance already has distributed units of charge in its dimensions, but charge and potential do not. The effect is that when potential expresses in terms of distributed charge, Q disappears. Therefore, it would be a prediction of the Aether Physics

Model that capacitance is equal to 4π divided by potential. The value of capacitance is not only inversely proportional to potential; its dimensions are the reciprocal of potential.

For capacitance to be related to charge, the Aether Physics Model dictates that charge is equal to capacitance times energy divided by 4π .

$$Q = \frac{C}{4\pi} E \tag{6.19}$$

The charges specified in equations (6.18) and (6.19) are not elementary charge, rather they are strong charge. Since strong charge already has the solid angle of a steradian, $4\pi Q$ has the solid angle of a half-spin sphere. And since the equations balance geometrically, capacitance times energy must manifest as half-spin solid angle charge.

Another important change regards the fundamental electromagnetic theories. In modern electromagnetic theory, the B field is magnetic flux density and the H field is magnetic field intensity. We learn from Clerk Maxwell that absolute permeability is equal to the ratio of B / H [87] as:

$$\mu_0 = \frac{B}{H} \tag{6.20}$$

But since the units of both magnetic flux density and magnetic field intensity should have distributed charge instead of single dimension charge:

$$mfxd = \frac{m_e F_q}{e_{emax}{}^2} \tag{6.21}$$

$$mfdi = \frac{e_{emax}{}^2 F_q}{\lambda_C} \tag{6.22}$$

The quantum measurement expression for equation (6.20) yields:

$$4\pi \cdot \mu_0 = \frac{mfxd \cdot chrg}{mfdi} \tag{6.23}$$

which suggests that the actual ratio of magnetic flux density to magnetic field intensity does not equal permeability.

Further, electromagnetic theory sees magnetic fields in terms of energy.

[87] Warren B. Boast Principles of Electric and Magnetic Fields (Harper & Brothers, New York, 1948) 173

> The total energy in any finite region of a magnetic field where the permeability is constant is the integral of the energy density over the volume or: $W = \frac{1}{2}\int_V \mu H^2 dv$ [88]

The fact that the basic relation underlying modern electromagnetic theory does not fit into the Aether Physics Model does not negate over 100 years of electromagnetic theory. However, if the Aether Physics Model is correct, all of electrodynamic theory needs reworking.

Instead of seeing magnetic fields in terms of energy, the Aether Physics Model sees them in terms of rotating magnetic field. The Aether unit is itself the magnetic field.

New Units

After clarifying the definitions of dimension, measurement, and unit, it becomes possible to develop a system of quantum measurements, which allows for further development of quantum measurement analysis.

Ideally, quantum measurement analysis would mirror the physical processes of the observed physical world. If this were true, we should be able to find a quantum measurement representation for every physical phenomenon. Conversely, we should be able to find a physical process that matches any combination of quantum measurements.

In this section, we identify various new units. The discovery of some units, like eddy current, actually occurred early in modern physics history and were either overlooked or discarded. Other units have appeared unnoticed in modern physics equations all along, such as the photon.

A fully developed treatment of quantum measurement analysis would require another publication entirely. Below is a small sampling of the new units utilized in the Aether Physics Model. In most cases, the units could apply immediately to our understanding of physics. In other cases, such as in understanding resonance, we need to review our measuring techniques.

Photon

In the Standard Model, the photon quantifies indirectly. Instead of the photon, physicists quantify an energy packet and then treat it as though it were the photon itself. This poor accounting creates many problems for the Standard Model.

In the Aether Physics Model, the photon defines in terms of the electron that produced it. The electron is primary angular momentum and quantifies by Planck's constant. The photon then defines as the primary angular

[88] Warren B. Boast Principles of Electric and Magnetic Fields (Harper & Brothers, New York, 1948) 179

momentum of the electron times the speed of light.

$$phtn = h \cdot c \tag{6.24}$$

Thus, the photon expands outward at the speed of light and has the angular momentum of an electron. As proposed by Cynthia Whitney[89], the photon remains connected to its source, even as it expands with cardioid geometry (see image page 158).

In the APM, there are two types, or "sizes," of photons. There is the electron/positron photon, and then there is a proton/antiproton photon. The proton/antiproton photon hypothesizes to occur in fusion reactions and to generate via the same mechanics as the Casimir effect. The quantification of the proton/antiproton photon is:

$$phtn_p = h_p \cdot c \tag{6.25}$$

where h_p is the APM value for proton angular momentum.

Light

Light comprises of quantum photons. In the Standard Model, the photon packet of green light has a different frequency than the photon packet of red light; the different frequency means that each photon packet has a different energy from every other photon packet. Further, if the mass/energy paradigm is used, the relativistic mass of each photon packet is different for each frequency of electromagnetic radiation. Therefore, the photon packet of the Standard Model is not truly quantum. The Standard Model presents an infinite number of various "sized" photon packets, one for each frequency. Unlike in the Standard Model, there is only one quantum photon in the Aether Physics Model.

In the Aether Physics Model, the photon is a true quantum. To get light, photons produce in rapid succession at the frequency of the light. Therefore, the unit of light is equal to photon times frequency.

$$ligt = phtn \cdot freq \tag{6.26}$$

An introduction to the mechanics of photons and light is on page 192.

Eddy Current

Jean Bernard Leon Foucault investigated eddy current in the early 1800s. Eddy current is a unit that appeared as early as 1922[90]. For some reason though, scientists either ignored or lost its unit definition. Eddy current is

[89] Whitney, Cynthia Kolb, Essay 1: This is Not Einstein's Postulate (Galilean Electrodynamics, Space Time Analysis LTD, Winter 2005) pp 43-44

[90] A Course in Electrical Engineering Volume II - Alternating Currents, McGraw Hill Book Company, Inc., 1947 pg 259

an important unit and is equal to magnetic flux squared.

$$eddy = mflx^2 \tag{6.27}$$

Eddy current also has other expressions and relates to Ohm's law. According to the Aether Physics Model, eddy current is also equivalent to angular momentum times resistance:

$$eddy = h \cdot resn \tag{6.28}$$

Equation (6.28) represents the measurement of electron-relaxation-times by eddy current damping. When the external magnetic field from a primary coil switches off it releases the induced magnetic field in a secondary coil. The electrons in the secondary coil quantified by their angular momentum are then relaxed[91]. Depending on the material of the secondary coil, the electrons will gyrate to a magnetic realignment. Due to the geometrical structure of the atoms and free electrons, the time it takes to gyrate back to stable magnetic realignment will vary from material to material. This unit of time times gyration toward magnetic realignment is the unit of resistance.

$$resn = time \cdot gyro \tag{6.29}$$

Eddy current is also equal to potential times 4π inductance.

$$eddy = potn \cdot 4\pi \cdot indc \tag{6.30}$$

A particularly interesting equation for eddy current involves the Aether geometrical constant, inductance, and capacitance:

$$eddy = 16\pi^2 \frac{indc}{capc} = 16\pi^2 \frac{\mu_0}{\varepsilon_0} \tag{6.31}$$

Equation (6.31) would indicate that Aether is directly involved with the mechanics of eddy current.

Another observation of interest is the relationship of eddy current to magnetic field:

$$eddy = mfld \frac{momt}{chrg} \tag{6.32}$$

The eddy current is equal to the magnetic field times momentum per electromagnetic charge. Thus, the eddy current is dependent upon a moving magnetic field.

According to many experts, eddy current is a complete path electrical current

[91] Arthur F. Kip Fundamentals of Electricity and Magnetism (McGraw Hill Book Company, New York, St. Louis, San Francisco, Toronto, London, Sidney, 1969) 316

that flows through the conductor as the magnetic flux changes.

According to a web site by Dr. James B. Calvert[92]:

> "A magnet produces a pure magnetic field in its *rest frame*. Anything moving with respect to the magnet sees an electric field in addition to the magnetic field that is roughly proportional to the relative velocity. An electron free to move, as in copper, will be set into motion by the electric field it sees. ... This current is called the *eddy* current, since it flows in closed loops in a conducting plate like eddying water."

Dr. Calvert goes on to describe the physical eddy current within a copper tube. A neodymium-iron-boron (NIB) magnet drops through. "The magnetic field passes through the tube walls at top and bottom in opposite directions, producing eddy currents that are essentially rings about the tube, flowing in opposite directions at top and bottom, and moving with the falling magnet."

In an effort to test this theory, we dropped a NIB magnet down a copper tube. The magnet was 1" in diameter and nearly ¼" thick.

As the magnet dropped, it dropped at a much slower velocity than it would in free space, as Dr. Calvert explained it would.

The plane of the magnet was almost perfectly perpendicular to the length of the tube during its descent.

According to Dr. Calvert, the magnetic field of the magnet moving through the copper tube made the copper tube see an electric current. This electric current flowed along one direction near the top of the magnet and in the opposite direction near the bottom of the magnet.

To test the theory we slit a section of copper pipe along its length, thus preventing any current flow around the periphery of the tube.

[92] Dr. James B. Calvert, Associate Professor Emeritus of Engineering, University of Denver Registered Professional Engineer, State of Colorado No.12317 http://www.du.edu/~jcalvert/phys/eddy.htm

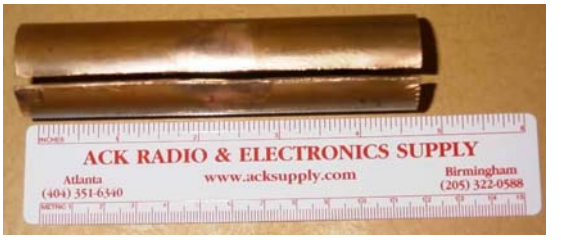


Figure 3. Copper tube with slit along length.

We then dropped the magnet into the slit tube. If the eddy currents were propagating through the periphery of the tube, they would not form in this experiment and would drop straight through.

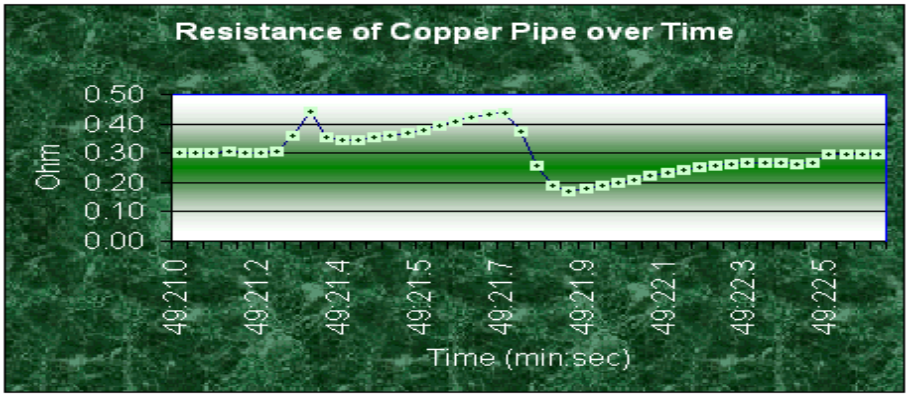
Figures 4 & 5 Magnet falling down slit tube.

But as shown in the photos above, the magnet still dropped through at a slow rate, although slightly faster than the rate of drop through the un-slit tube. In addition, the magnet did not fall perpendicular to the length of the tube. Instead, it fell with a noticeable tilt toward the slit.

The interpretation of this experiment is that the eddy current is a result of the angular momentum of the electrons (cut by the magnetic field) times the resistance of the electrons (cut by the magnetic field). Along the slit, there are no electrons and thus no eddy currents, and so the magnet tends to fall faster along this area. Nevertheless, the angular momentum in the atoms along the path of the magnetic field still contributes to eddy currents and thus this portion of the magnet tends to fall slower. This results in the tilt of the magnet as it falls.

We attached an HP 34970A data acquisition switch with a built in digital multimeter to test for resistance. Two terminals were soldered mid-length, one on each side of the slit as in the image to the right. We cleaned the terminals to assure a good contact.

The magnet dropped down the tube while measuring resistance at the terminals. Several tests ran with each test producing the same graph, as shown below.



The spike at the beginning of the drop occurred at the beginning of each test. Apparently, resistance increases as the magnet approaches the test leads and then abruptly decreases just before passing. Then the resistance gradually returns to normal as the magnet moves away.

The preliminary conclusion is that eddy current is an actual unit of electrical behavior. The current produced is within each atom and not within the macro structure of the atoms (copper tube in this case), at least not under normal conditions. The properties of angular momentum and resistance are capable of interacting to produce a combined effect that we call eddy currents.

This, of course, is not the standard explanation for eddy current. The normal explanation is that the magnet generates a potential on the leads, and thus the ohmmeter, expecting no potential, is "fooled" into seeing less (or more) resistance. This is, of course, true, as measurement does show an increase in potential at the edges of the pipe as the magnet passes by. However, the induced potential reacting to the inductance of the copper is also a way of seeing eddy current, as in equation(6.30).

The difference between the understandings of eddy current presented here and the standard interpretation of eddy current is the standard interpretation considers resistance a characteristic of a material, rather than an effect of electricity. According to the APM, the eddy current develops because of onta interacting with the Aether units in which they reside.

Gyration

The unit of gyration is equal to potential per charge:

$$gyro = \frac{potn}{chrg} \tag{6.33}$$

We discussed the eddy current unit on page 121.

Friction

Friction is a unit, which is equal to resistance times velocity.

$$fric = resn \cdot velc \tag{6.34}$$

Friction times charge is equal to rotating magnetic field.

$$fric \cdot chrg = rmfd \tag{6.35}$$

Understanding the friction unit helps in understanding the nature of resistance. Take two objects, such as your hands, and press them together as though you were going to rub them. As long as the two objects have lateral pressure but do not move, then only resistance is in effect. When the objects are actually moving against each other, then friction is in effect. Friction is resistance in motion.

In the discussion above concerning eddy current, eddy current is also equal to the friction applied to the ligamen circulatus of the onta.

Drag

The unit of drag is equal to the resistance times length.

$$drag = resn \cdot leng \tag{6.36}$$

When visualizing the unit of drag we would think of friction, except that instead of focusing on the moving resistance, we focus on the contact surface itself. When charge drags against the Aether, it produces a magnetic field:

$$drag \cdot chrg = mfld \tag{6.37}$$

When angular momentum drags, it produces eddy current through a length:

$$h \cdot drag = eddy \cdot leng \tag{6.38}$$

Resonance

Distributed frequency is equal to resonance. Viewing resonance in just one dimension of frequency is like viewing area in just one dimension of length. The true meaning of resonance is lost when we change its dimensions. The unit of resonance indicates there are two distinct dimensions of frequency involved.

$$rson = freq^2 \tag{6.39}$$

Modern physics does not measure capacitance and inductance as square roots, yet the resonance equation usually expresses as:

$$F = \frac{1}{2\pi\sqrt{LC}} \tag{6.40}$$

where F is the "resonant frequency," L is the inductance and C is the capacitance. ("Resonant frequency" is redundant and incorrect. It is like saying "surface length.") Equation (6.40) loses much of its meaning by

making it appear the inductance and capacitance measurements are square roots and expressing the resonance in terms of frequency. It is as though modern physics has not yet discovered the unit of resonance.

To make the math of resonance compatible with the rest of physics, the correct expression would keep the natural measurements of inductance and capacitance and notate the result as frequency squared. In the Aether Physics Model, equation (6.41) arises as a different equation (6.40) from the Standard Model resonance equation.

$$rson = \frac{1}{4\pi \cdot indc \cdot capc} \tag{6.41}$$

Equation (6.41) differs from the Standard Model resonance equation by a factor of $\sqrt{\pi}$ and yet it produces true resonance in physical experiments. This is not to say the Standard Model resonance equation is wrong. It is merely incomplete. There are actually three resonance equations, which are related through the Pythagorean Theorem.

We express the three resonance equations in terms of a common denominator of $4\pi^2$ and in quantum measurements units:

$$rson1 = \frac{1}{4\pi^2 \cdot indc \cdot capc} \tag{6.42}$$

$$rson2 = \frac{\pi - 1}{4\pi^2 \cdot indc \cdot capc} \tag{6.43}$$

$$rson3 = \frac{\pi}{4\pi^2 \cdot indc \cdot capc} \tag{6.44}$$

Equations (6.42) to (6.44) are related such that:

$$rson1 + rson2 = rson3 \tag{6.45}$$

The rson1 eqution is identical to the Standard Model equation for resonance(6.40), and is associated with the highest potential. The rson3 equation is the true resonance of an inductive-capacitive circuit and is identical to equation (6.41). Both rson2 and rson3 equations resonate with potential near zero.

The resonance unit indicates that resonance must measure as a distributed quantity in order for us to arrive at the correct value. The design of present measurement equipment measures resonance in only one dimension of frequency.

Because familiarity with the time domain exists at the macro level of existence, modern physics also measures the quantum realm in the time domain. The reciprocal of time is frequency, not resonance. It is a

significant error that modern physics does not recognize resonance as a distributed unit.

The quantum realm exists in a five-dimensional space-resonance as opposed to a four-dimensional space-time. If physicists wish to understand quantum existence properly, then we must design measurement equipment to measure directly in the resonance domain. Presently, Fourier analysis attempts to account for this shortcoming by mathematically converting time domain measurements into frequency domain data.

The Aether Physics Model provides other ways to see resonance. Earlier we demonstrated that $potn$ has the reciprocal dimensions of capacitance $(capc)$. Therefore, resonance is equal to potential per inductance:

$$rson = \frac{potn}{4\pi \cdot indc} \tag{6.46}$$

The above equation manifests when winding a flat spiral secondary coil and then covering it with epoxy or some other dielectric. If we seal the coil from electron leaks, the potential rises and so does the resonance. When the coil is fully sealed, then the added dielectric increases the capacitance and the resonance decreases as in equation (6.47).

$$rson = \frac{4\pi \cdot curr}{capc \cdot h} \tag{6.47}$$

Capacity times angular momentum is the product of the coil's capacity to hold electrons times the number of electrons on one of the plates, or charge intensity. Resonance is thus proportional to current and inversely proportional to the charge intensity.

Resonance relates to spherical geometry in the Aether unit. The distributed frequency unit applies at the quantum level to produce space-resonance. In the Aether unit graphic seen on the cover of this book, the two frequency dimensions are the source of space curvature. Indeed, in acoustics, two longitudinal waves bounce through each other to produce a string of spheres.

The physics of resonance as distributed frequency extends to the macro realm of existence. We can analyze a cylindrical pot of water with a vibration applied to its bottom.

Let us choose a 12" diameter pot and fill it with water. The depth of the water is not important to this analysis, but we will choose six inches for the depth. Applying a variable mechanical vibration to the bottom of the pot, we empirically discover maximum standing waves forming at 14.7Hz. We then discover the distributed velocity of the water waves

moving horizontally from the wall of the pot towards its center:

$$(14.7Hz)^2 \cdot 2\pi(6in)^2 = 31.534\left(\frac{m}{sec}\right)^2 \tag{6.48}$$

The resonance times the surface area is equal to the distributed velocity. The distributed velocity is the average velocity of the water from the pot wall toward the center. The distributed velocity is the product of the velocity in two orthogonal vectors and relates directly to the temperature of the water.

In quantum measurement units, however, the temperature of the water relates directly to the maximum temperature of quantum structures, as explained a little later. Since the temperature of water involves distributed velocity far below the distributed speed of light, the value of the temp unit is very low.

$$31.534\left(\frac{m}{sec}\right)^2 = 3.509\times10^{-16}temp \tag{6.49}$$

The temperature scale at the macro level of our human existence depends upon the relative velocities of molecules, which are of a more complex order of existence than subatomic particles. The reason that seemingly unrelated temperature units developed within physics is due to this complexity disparity between macro and quantum existence. Further research must determine the scale factors between the various levels of complexity. For now, we will simply refer to the result of equation (6.48) as "distributed velocity."

The average distributed velocity of the water directly relates to the specific volume and average pressure of the water.

$$velc^2 = spcv \cdot pres \tag{6.50}$$

Empirically, we know the specific volume of water is equal to $.01602\frac{ft^3}{lb}$, which in quantum measurement units equals $63.781spcv$. Since we now have the average distributed velocity and specific volume of the water, we can determine the average pressure:

$$\frac{3.509\times10^{-16}velc^2}{63.781spcv} = 5.589\times10^{-18}\,pres = 3.204\times10^{4}\,Pa \tag{6.51}$$

Distributed velocity also relates to resonance in acoustics. According to standard physics, the resonance of a vibrating string is equal to:

$$F = \frac{1}{2L}\sqrt{\frac{T}{\rho}} \tag{6.52}$$

where F is the "resonant frequency", L is the length of the string, T is the force applied to the string, and ρ is the density of the string.[93] Once again, it is obvious that resonance is not dependent upon the square root of force and density. The quantum measurement units expression for the resonance of a string is:

$$rson = \frac{forc}{leng^2 \cdot rbnd} \tag{6.53}$$

where $rbnd$ (rebound) is the unit equal to mass per length in the Aether Physics Model. Mass per length is also equal to line density. Rebound is a measure of the strength for which an object with mass will reflect off an inelastic surface. The greater the mass per length, the more intense the rebound will be.

Since we are dealing with resonance, there are two orthogonal frequencies involved; there is a wave of string traveling a velocity in one direction, and a wave of string traveling in the opposite direction. In the fundamental quarter resonance there is one-half cycle between the ends of the string moving one direction and one-half cycle moving the opposite direction, which is inversely proportional to one-quarter of the total distributed wavelength.

$$\frac{rson}{4} = \frac{velc^2}{4 \cdot leng^2} \tag{6.54}$$

The distributed velocity of the string depends upon the physical properties of the string and its environment.

It is clear that where equations show resonance as equal to the square root of measurements, the equations should express instead as distributed frequency. Although such a change may meet initial resistance, it is essential to simplify physics by making it consistent throughout. We will just have to get used to saying, "the resonance of an electrical circuit is equal to x [frequency unit] squared."

Q FACTOR

The so-called "Q factor" of a coil indicates the "sharpness" of a resonance curve. The Q factor is a dimensionless value derived from the following formula:

[93] John Backus, The Acoustical Foundations of Music (W.W. Norton & Company, New York, 1977) p 41

$$Q = \frac{\omega L}{R} \tag{6.55}$$

where ω is the frequency, L is the inductance, and R is the resistance. In the APM, the unit represented by R is actually magnetic flux. The magnetic flux is a measure of the coil's reactance, not its resistance. In the APM, equation (6.55) expresses as:

$$freq \cdot 4\pi \cdot indc = mflx \tag{6.56}$$

If the value for R were measured as magnetic flux and with the correct charge dimensions, Q would always be equal to 1. Since R incorrectly measures as resistance, the Q factor is really an error factor, which also happens to coincide with the sharpness of the resonance.

The Aether Physics Model shows there is a balance between matter and environment and that minimizing the eddy current in the coil results in sharper resonance. An identity arises from equations (6.46) and (6.47):

$$\frac{potn}{4\pi \cdot indc} = \frac{4\pi \cdot curr}{capc \cdot h} \tag{6.57}$$

We can transpose the identity such that:

$$\frac{potn \cdot h}{curr} = \frac{16\pi^2 \cdot indc}{capc} \tag{6.58}$$

The value of h is Planck's constant and $16\pi^2$ is the Aether geometrical constant. The potential, current, and Planck's constant are characteristics of the electron (matter), and inductance, capacitance, and $16\pi^2$ are characteristics of the Aether (environment). Each side of equation (6.58) quantifies eddy current:

$$\begin{aligned} \frac{potn \cdot h}{curr} &= eddy \\ \frac{16\pi^2 \cdot indc}{capc} &= eddy \end{aligned} \tag{6.59}$$

Minimizing the eddy current by changing the material and environmental characteristics of the coil increases the sharpness of the resonance.

Diverging Electric Field

The diverging electric field has a unit of its own and it is equal to electric field strength per length:

$$dvef = \frac{elfs}{leng} \tag{6.60}$$

Diverging electric field is also equal to electromagnetism (mass to strong charge ratio) times resonance:

$$dvef = mchg \cdot rson \tag{6.61}$$

Irradiance

Irradiance is expressed as diverging electric field times current:

$$irrd = dvef \cdot curr \tag{6.62}$$

Traditionally, irradiance is equal to power per area:

$$irrd = \frac{powr}{area} \tag{6.63}$$

Temperature

In the Standard Model, temperature appears as a dimension of its own and unrelated to the dimensions of length, time, mass and charge. However, in the Aether Physics Model temperature is equal to velocity squared. This makes sense since temperature defines as motion among colliding bodies.

$$temp = \lambda_C{}^2 \cdot F_q{}^2 \tag{6.64}$$

Defining temperature as "molecules in motion" is not enough, however. Because there are different orders of reality, and molecules are just one order, distributed velocity must manifest in slightly different ways for each order of existence. An electron exists in one fourth of the total available spin positions in the Aether, yet Aether directly encapsulates it. The Aether exists in five-dimensional reality even though the electron only manifests four dimensions. If we define a unit such as temperature as "molecules in motion," we are missing key aspects of reality relevant to quantum existence.

Molecules, although composed of subatomic particles, exist on a larger scale. There are new dimensions of existence added as complexity increases. For example, the perception of color does not exist at the quantum level, but does exist at the level of animals, plants and minerals. It is in this sense that temperature does not exist at the quantum level. Although electrons and protons experience distributed velocity, they do not change state among gas, liquid, and solid, but produce plasma, instead.

Radiation is a case of distributed velocity moving in only one direction, namely outward from its source. The case of standing waves is a case of distributed velocity moving one direction and then reflecting in the opposite direction. The case of temperature specifically relates to the orders of atoms and molecules, which produce standing waves by bouncing off each other.

We developed our temperature scales of Celsius, Kelvin, and Fahrenheit specifically for measuring the distributed velocity within atoms and molecules bouncing off each other, which is why temperature seems to both relate to, and be in conflict with, our concept of radiation. There is really no single term available having the same meaning as the phrase "distributed velocity," and which applies to all of its manifestations.

The relationship of temperature to energy is:

$$enrg = mass \cdot temp \tag{6.65}$$

Knowing that 273.15K times 1.2929 kg/m3 equals one atmosphere, we can calculate the conversion factor for Kelvin to temp units:

$$K = \frac{atm}{\frac{1.2929 \frac{kg}{m^3}}{273.15}} \tag{6.66}$$

$$K = 286.91 Sv \tag{6.67}$$

$$K = 3.19 \times 10^{-15} temp \tag{6.68}$$

Nevertheless, the unit for measuring molecules in motion does not directly apply to the unit for unidirectional radiation. It is necessary to account for scaling factors.

Units Grid

Sometimes the lack of something speaks volumes. In all of modern physics, nobody has made the effort to systematize all the known units. This is understandable since modern physics has the wrong dimensions for charge, which makes it difficult to find meaningful patterns in unit structure.

The following tables show several groups of units in both their obverse and inverse expressions. All of the known units are included. Many of the units presented remain absent in modern physics. Even with the addition of many new units, it is apparent that we have not even come close to identifying all the different manifestations of non-material existence. The unit of eddy current does not fit into the table structure. Also, there are at least two electromagnetic tables not included since they have no entries.

Some units have multiple expressions, but only one is given. We present merely a beginning of the topic in this chapter and the tables below.

Supportive Electromagnetic Units

OBVERSE UNITS		
Rotating Magnetic Field	**Magnetic Field**	**Magnetic Volume**
$A_u = \frac{m_e \cdot \lambda_C{}^3 \cdot F_q{}^2}{e_{emax}{}^2}$	$mfld = \frac{m_e \cdot \lambda_C{}^3 \cdot F_q}{e_{emax}{}^2}$	$mvlm = \frac{m_e \cdot \lambda_C{}^3}{4\pi \cdot e_{emax}{}^2}$
Electric Potential	**Magnetic Flux**	**Inductance**
$potn = \frac{m_e \cdot \lambda_C{}^2 \cdot F_q{}^2}{e_{emax}{}^2}$	$mflx = \frac{m_e \cdot \lambda_C{}^2 \cdot F_q}{e_{emax}{}^2}$	$indc = \frac{m_e \cdot \lambda_C{}^2}{4\pi \cdot e_{emax}{}^2}$
Electric Field Strength	**Magnetic Momentum**	**Permeability**
$elfs = \frac{m_e \cdot \lambda_C \cdot F_q{}^2}{e_{emax}{}^2}$	$emgm = \frac{m_e \cdot \lambda_C \cdot F_q}{e_{emax}{}^2}$	$\mu_0 = \frac{m_e \cdot \lambda_C}{4\pi \cdot e_{emax}{}^2}$
Diverging Electric Field	**Magnetic Flux Density**	**Electromagnetism**
$dvef = \frac{m_e \cdot F_q{}^2}{e_{emax}{}^2}$	$mfxd = \frac{m_e \cdot F_q}{e_{emax}{}^2}$	$mchg = \frac{m_e}{e_{emax}{}^2}$

INVERSE UNITS		
		Permittivity
$? = \frac{e_{emax}{}^2}{m_e \cdot \lambda_C{}^3}$	$? = \frac{e_{emax}{}^2}{m_e \cdot \lambda_C{}^3 \cdot F_q}$	$\varepsilon_0 = \frac{4\pi \cdot e_{emax}{}^2}{m_e \cdot \lambda_C{}^3 \cdot F_q{}^2}$
	Conductance	**Capacitance**
$? = \frac{e_{emax}{}^2}{m_e \cdot \lambda_C{}^2}$	$cond = \frac{e_{emax}{}^2}{m_e \cdot \lambda_C{}^2 \cdot F_q}$	$capc = \frac{4\pi \cdot e_{emax}{}^2}{m_e \cdot \lambda_C{}^2 \cdot F_q{}^2}$
Curl?	**Conductance Momentum**	
$? = \frac{e_{emax}{}^2}{m_e \cdot \lambda_C}$	$cmom = \frac{e_{emax}{}^2}{m_e \cdot \lambda_C \cdot F_q}$	$? = \frac{4\pi \cdot e_{emax}{}^2}{m_e \cdot \lambda_C \cdot F_q{}^2}$
Exposure	**Conductance Density**	
$expr = \frac{e_{emax}{}^2}{m_e}$	$cden = \frac{e_{emax}{}^2}{m_e \cdot F_q}$	$? = \frac{e_{emax}{}^2}{m_e \cdot F_q{}^2}$

Opposing Electromagnetic Units

OBVERSE UNITS		
Friction	**Drag**	**Vorticular Opposition**
$fric = \frac{m_e \cdot \lambda_C{}^3 \cdot F_q{}^2}{e_{emax}{}^4}$	$drag = \frac{m_e \cdot \lambda_C{}^3 \cdot F_q}{e_{emax}{}^4}$	$vopp = \frac{m_e \cdot \lambda_C{}^3}{4\pi \cdot e_{emax}{}^4}$
Rub	**Resistance**	**Angular Opposition**
$rub = \frac{m_e \cdot \lambda_C{}^2 \cdot F_q{}^2}{e_{emax}{}^4}$	$resn = \frac{m_e \cdot \lambda_C{}^2 \cdot F_q}{e_{emax}{}^4}$	$aopp = \frac{m_e \cdot \lambda_C{}^2}{4\pi \cdot e_{emax}{}^4}$
Plow	**Skid**	**Linear Opposition**
$plow = \frac{m_e \cdot \lambda_C \cdot F_q{}^2}{e_{emax}{}^4}$	$skid = \frac{m_e \cdot \lambda_C \cdot F_q}{e_{emax}{}^4}$	$lopp = \frac{m_e \cdot \lambda_C}{4\pi \cdot e_{emax}{}^4}$
Hold	**Stop**	**Electromagnetic Opposition**
$hold = \frac{m_e \cdot F_q{}^2}{e_{emax}{}^4}$	$stop = \frac{m_e \cdot F_q}{e_{emax}{}^4}$	$eopp = \frac{m_e}{e_{emax}{}^4}$

INVERSE UNITS		
$? = \frac{e_{emax}{}^4}{m_e \cdot \lambda_C{}^3}$	$? = \frac{e_{emax}{}^4}{m_e \cdot \lambda_C{}^3 \cdot F_q}$	$? = \frac{4\pi \cdot e_{emax}{}^4}{m_e \cdot \lambda_C{}^3 \cdot F_q{}^2}$
$? = \frac{e_{emax}{}^4}{m_e \cdot \lambda_C{}^2}$	$? = \frac{e_{emax}{}^4}{m_e \cdot \lambda_C{}^2 \cdot F_q}$	$? = \frac{4\pi \cdot e_{emax}{}^4}{m_e \cdot \lambda_C{}^2 \cdot F_q{}^2}$
$? = \frac{e_{emax}{}^4}{m_e \cdot \lambda_C}$	$? = \frac{e_{emax}{}^4}{m_e \cdot \lambda_C \cdot F_q}$	$? = \frac{4\pi \cdot e_{emax}{}^4}{m_e \cdot \lambda_C \cdot F_q{}^2}$
$? = \frac{e_{emax}{}^4}{m_e}$	$? = \frac{e_{emax}{}^4}{m_e \cdot F_q}$	$? = \frac{e_{emax}{}^4}{m_e \cdot F_q{}^2}$

Electric Units 1

OBVERSE UNITS			
$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C^{\ 3}\cdot F_q^{\ 3}}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C^{\ 3}\cdot F_q^{\ 2}}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C^{\ 3}\cdot F_q}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C^{\ 3}}$
$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}\cdot F_q^{\ 3}}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}\cdot F_q^{\ 2}}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}\cdot F_q}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}}$
$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C\cdot F_q^{\ 3}}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C\cdot F_q^{\ 2}}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C\cdot F_q}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot\lambda_C}$
$?=\frac{1}{e_{emax}^{\ 2}\cdot F_q^{\ 3}}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot F_q^{\ 2}}$	$?=\frac{1}{e_{emax}^{\ 2}\cdot F_q}$	$?=\frac{1}{e_{emax}^{\ 2}}$

INVERSE UNITS			
$?=e_{emax}^{\ 2}\cdot\lambda_C^{\ 3}$	$?=e_{emax}^{\ 2}\cdot\lambda_C^{\ 3}\cdot F_q$	$?=e_{emax}^{\ 2}\cdot\lambda_C^{\ 3}\cdot F_q^{\ 2}$	$?=e_{emax}^{\ 2}\cdot\lambda_C^{\ 3}\cdot F_q^{\ 3}$
Surface Charge	**Magnetic Moment**		**Ball Lightning?**
$sfch=e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}$	$magm=e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}\cdot F_q$	$?=e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}\cdot F_q^{\ 2}$	$?=e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}\cdot F_q^{\ 3}$
Charge Length			
$chgl=e_{emax}^{\ 2}\cdot\lambda_C$	$?=e_{emax}^{\ 2}\cdot\lambda_C^{\ 2}\cdot F_q$	$?=e_{emax}^{\ 2}\cdot\lambda_C\cdot F_q^{\ 2}$	$?=e_{emax}^{\ 2}\cdot\lambda_C\cdot F_q^{\ 3}$
Charge	**Current**		
$chrg=e_{emax}^{\ 2}$	$curr=e_{emax}^{\ 2}\cdot F_q$	$?=e_{emax}^{\ 2}\cdot F_q^{\ 2}$	$?=e_{emax}^{\ 2}\cdot F_q^{\ 3}$

Electric Units 2

OBVERSE UNITS			
			Specific Charge
$?=\frac{\lambda_C^{\ 3}}{e_{emax}^{\ 2}\cdot F_q^{\ 3}}$	$?=\frac{\lambda_C^{\ 3}}{e_{emax}^{\ 2}\cdot F_q^{\ 2}}$	$?=\frac{\lambda_C^{\ 3}}{e_{emax}^{\ 2}\cdot F_q}$	$spch=\frac{\lambda_C^{\ 3}}{e_{emax}^{\ 2}}$
$?=\frac{\lambda_C^{\ 2}}{e_{emax}^{\ 2}\cdot F_q^{\ 3}}$	$?=\frac{\lambda_C^{\ 2}}{e_{emax}^{\ 2}\cdot F_q^{\ 2}}$	$?=\frac{\lambda_C^{\ 2}}{e_{emax}^{\ 2}\cdot F_q}$	$?=\frac{\lambda_C^{\ 2}}{e_{emax}^{\ 2}}$
			Charge Radius
$?=\frac{\lambda_C}{e_{emax}^{\ 2}\cdot F_q^{\ 3}}$	$?=\frac{\lambda_C}{e_{emax}^{\ 2}\cdot F_q^{\ 2}}$	$?=\frac{\lambda_C}{e_{emax}^{\ 2}\cdot F_q}$	$chgr=\frac{\lambda_C}{e_{emax}^{\ 2}}$

INVERSE UNITS			
Charge Density			
$chgd = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 3}}$	$? = \frac{e_{emax}^{\ 2} \cdot F_q^{\ 3}}{\lambda_C^{\ 3}}$	$? = \frac{e_{emax}^{\ 2} \cdot F_q^{\ 2}}{\lambda_C^{\ 3}}$	$? = \frac{e_{emax}^{\ 2} \cdot F_q^{\ 3}}{\lambda_C^{\ 3}}$
Electric Flux Density	**Current Density**		
$efxd = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 2}}$	$cdns = \frac{e_{emax}^{\ 2} \cdot F_q}{\lambda_C^{\ 2}}$	$? = \frac{e_{emax}^{\ 2} \cdot F_q^{\ 2}}{\lambda_C^{\ 2}}$	$? = \frac{e_{emax}^{\ 2} \cdot F_q^{\ 3}}{\lambda_C^{\ 2}}$
	Magnetic Field Intensity		
$? = \frac{e_{emax}^{\ 2}}{\lambda_C}$	$mfdi = \frac{e_{emax}^{\ 2} \cdot F_q}{\lambda_C}$	$? = \frac{e_{emax}^{\ 2} \cdot F_q^{\ 2}}{\lambda_C}$	$? = \frac{e_{emax}^{\ 2} \cdot F_q^{\ 3}}{\lambda_C}$

Electric Units 3

OBVERSE UNITS			
		Electric Field	**Specific Charge**
$? = \frac{\lambda_C^{\ 3} \cdot F_q^{\ 3}}{e_{emax}^{\ 2}}$	$? = \frac{\lambda_C^{\ 3} \cdot F_q^{\ 2}}{e_{emax}^{\ 2}}$	$efld = \frac{\lambda_C^{\ 3} \cdot F_q}{e_{emax}^{\ 2}}$	$spch = \frac{\lambda_C^{\ 3}}{e_{emax}^{\ 2}}$
$? = \frac{\lambda_C^{\ 2} \cdot F_q^{\ 3}}{e_{emax}^{\ 2}}$	$? = \frac{\lambda_C^{\ 2} \cdot F_q^{\ 2}}{e_{emax}^{\ 2}}$	$? = \frac{\lambda_C^{\ 2} \cdot F_q}{e_{emax}^{\ 2}}$	$? = \frac{\lambda_C^{\ 2}}{e_{emax}^{\ 2}}$
			Charge Radius
$? = \frac{\lambda_C \cdot F_q^{\ 3}}{e_{emax}^{\ 2}}$	$? = \frac{\lambda_C \cdot F_q^{\ 2}}{e_{emax}^{\ 2}}$	$? = \frac{\lambda_C \cdot F_q}{e_{emax}^{\ 2}}$	$chgr = \frac{\lambda_C}{e_{emax}^{\ 2}}$
$? = \frac{F_q^{\ 3}}{e_{emax}^{\ 2}}$	$? = \frac{F_q^{\ 2}}{e_{emax}^{\ 2}}$	$? = \frac{F_q}{e_{emax}^{\ 2}}$	$? = \frac{1}{e_{emax}^{\ 2}}$

INVERSE UNITS			
Charge Density			
$chgd = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 3}}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 3} \cdot F_q}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 3} \cdot F_q^{\ 2}}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 3} \cdot F_q^{\ 3}}$
Electric Flux Density			
$efxd = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 2}}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 2} \cdot F_q}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 2} \cdot F_q^{\ 2}}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C^{\ 2} \cdot F_q^{\ 3}}$
$? = \frac{e_{emax}^{\ 2}}{\lambda_C}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C \cdot F_q}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C \cdot F_q^{\ 2}}$	$? = \frac{e_{emax}^{\ 2}}{\lambda_C \cdot F_q^{\ 3}}$
Charge			
$chrg = e_{emax}^{\ 2}$	$? = \frac{e_{emax}^{\ 2}}{F_q}$	$? = \frac{e_{emax}^{\ 2}}{F_q^{\ 2}}$	$? = \frac{e_{emax}^{\ 2}}{F_q^{\ 3}}$

Inertial Units 1

OBVERSE UNITS			
Light	**Photon**	**Rotation**	**Vortex**
$ligt = m_e \cdot \lambda_C{}^3 \cdot F_q{}^3$	$phtn = m_e \cdot \lambda_C{}^3 \cdot F_q{}^2$	$rota = m_e \cdot \lambda_C{}^3 \cdot F_q$	$vrtx = m_e \cdot \lambda_C{}^3$
Power	**Energy**	**Angular Momentum**	**Moment of Inertia**
$powr = m_e \cdot \lambda_C{}^2 \cdot F_q{}^3$	$enrg = m_e \cdot \lambda_C{}^2 \cdot F_q{}^2$	$h = m_e \cdot \lambda_C{}^2 \cdot F_q$	$minr = m_e \cdot \lambda_C{}^2$
Shock Frequency or Light Intensity	**Force**	**Momentum**	**Torque**
$shkf = m_e \cdot \lambda_C \cdot F_q{}^3$	$forc = m_e \cdot \lambda_C \cdot F_q{}^2$	$momt = m_e \cdot \lambda_C \cdot F_q$	$torq = m_e \cdot \lambda_C$
Irradiance	**Surface Tension**	**Intensity**	**Mass**
$irrd = m_e \cdot F_q{}^3$	$sten = m_e \cdot F_q{}^2$	$ints = m_e \cdot F_q$	$mass = m_e$

INVERSE UNITS			
$? = \frac{1}{m_e \cdot \lambda_C{}^3}$	$? = \frac{1}{m_e \cdot \lambda_C{}^3 \cdot F_q}$	$? = \frac{1}{m_e \cdot \lambda_C{}^3 \cdot F_q{}^2}$	$? = \frac{1}{m_e \cdot \lambda_C{}^3 \cdot F_q{}^3}$
$? = \frac{1}{m_e \cdot \lambda_C{}^2}$	$? = \frac{1}{m_e \cdot \lambda_C{}^2 \cdot F_q}$	$? = \frac{1}{m_e \cdot \lambda_C{}^2 \cdot F_q{}^2}$	$? = \frac{1}{m_e \cdot \lambda_C{}^2 \cdot F_q{}^3}$
$? = \frac{1}{m_e \cdot \lambda_C}$	$? = \frac{1}{m_e \cdot \lambda_C \cdot F_q}$	$? = \frac{1}{m_e \cdot \lambda_C \cdot F_q{}^2}$	$? = \frac{1}{m_e \cdot \lambda_C \cdot F_q{}^3}$
$? = \frac{1}{m_e}$	$? = \frac{1}{m_e \cdot F_q}$	$? = \frac{1}{m_e \cdot F_q{}^2}$	$? = \frac{1}{m_e \cdot F_q{}^3}$

Inertial Units 2

OBVERSE UNITS			
			Mass Density
$? = \frac{m_e \cdot F_q{}^3}{\lambda_C{}^3}$	$? = \frac{m_e \cdot F_q{}^2}{\lambda_C{}^3}$	$? = \frac{m_e \cdot F_q}{\lambda_C{}^3}$	$masd = \frac{m_e}{\lambda_C{}^3}$
			Surface Density
$? = \frac{m_e \cdot F_q{}^3}{\lambda_C{}^2}$	$? = \frac{m_e \cdot F_q{}^2}{\lambda_C{}^2}$	$? = \frac{m_e \cdot F_q}{\lambda_C{}^2}$	$sfcd = \frac{m_e}{\lambda_C{}^2}$
	Pressure	**Viscosity**	**Rebound**
$? = \frac{m_e \cdot F_q{}^3}{\lambda_C}$	$pres = \frac{m_e \cdot F_q{}^2}{\lambda_C}$	$visc = \frac{m_e \cdot F_q}{\lambda_C}$	$rbnd = \frac{m_e}{\lambda_C}$

INVERSE UNITS			
Specific Volume			
$spcv = \frac{\lambda_C^{\,3}}{m_e}$	$? = \frac{\lambda_C^{\,3}}{m_e \cdot F_q}$	$? = \frac{\lambda_C^{\,3}}{m_e \cdot F_q^{\,2}}$	$? = \frac{\lambda_C^{\,3}}{m_e \cdot F_q^{\,3}}$
$? = \frac{\lambda_C^{\,2}}{m_e}$	$? = \frac{\lambda_C^{\,2}}{m_e \cdot F_q}$	$? = \frac{\lambda_C^{\,2}}{m_e \cdot F_q^{\,2}}$	$? = \frac{\lambda_C^{\,2}}{m_e \cdot F_q^{\,3}}$
$? = \frac{\lambda_C}{m_e}$	$? = \frac{\lambda_C}{m_e \cdot F_q}$	$? = \frac{\lambda_C}{m_e \cdot F_q^{\,2}}$	$? = \frac{\lambda_C}{m_e \cdot F_q^{\,3}}$

Inertial Units 3

OBVERSE UNITS		
$? = \frac{m_e}{\lambda_C^{\,3} \cdot F_q^{\,3}}$	$? = \frac{m_e}{\lambda_C^{\,3} \cdot F_q^{\,2}}$	$? = \frac{m_e}{\lambda_C^{\,3} \cdot F_q}$
$? = \frac{m_e}{\lambda_C^{\,2} \cdot F_q^{\,3}}$	$? = \frac{m_e}{\lambda_C^{\,2} \cdot F_q^{\,2}}$	$? = \frac{m_e}{\lambda_C^{\,2} \cdot F_q}$
$? = \frac{m_e}{\lambda_C \cdot F_q^{\,3}}$	$? = \frac{m_e}{\lambda_C \cdot F_q^{\,2}}$	$? = \frac{m_e}{\lambda_C \cdot F_q}$

INVERSE UNITS		
$? = \frac{\lambda_C^{\,3} \cdot F_q}{m_e}$	$? = \frac{\lambda_C^{\,3} \cdot F_q^{\,2}}{m_e}$	$? = \frac{\lambda_C^{\,3} \cdot F_q^{\,3}}{m_e}$
$? = \frac{\lambda_C^{\,2} \cdot F_q}{m_e}$	$? = \frac{\lambda_C^{\,2} \cdot F_q^{\,2}}{m_e}$	$? = \frac{\lambda_C^{\,2} \cdot F_q^{\,3}}{m_e}$
$? = \frac{\lambda_C \cdot F_q}{m_e}$	$? = \frac{\lambda_C \cdot F_q^{\,2}}{m_e}$	$? = \frac{\lambda_C \cdot F_q^{\,3}}{m_e}$

Length/Frequency Units 1

OBVERSE UNITS		
Space-Resonance	**Flow**	**Volume**
$dtrd = \lambda_C^{\,3} \cdot F_q^{\,2}$	$flow = \lambda_C^{\,3} \cdot F_q$	$volm = \lambda_C^{\,3}$
Radiation Dose or Temperature	**Sweep or Angular Velocity**	**Area**
$rdtn = \lambda_C^{\,2} \cdot F_q^{\,2}$	$swep = \lambda_C^{\,2} \cdot F_q$	$area = \lambda_C^{\,2}$
Acceleration	**Velocity**	**Line**
$accl = \lambda_C \cdot F_q^{\,2}$	$velc = \lambda_C \cdot F_q$	$leng = \lambda_C$
Resonance	**Frequency**	
$rson = F_q^{\,2}$	$freq = F_q$	

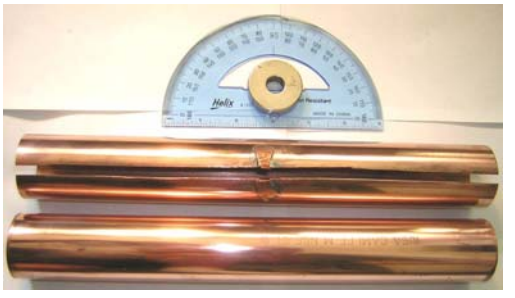
INVERSE UNITS		
$? = \frac{1}{\lambda_C^{\,3}}$	$? = \frac{1}{\lambda_C^{\,3} \cdot F_q}$	$? = \frac{1}{\lambda_C^{\,3} \cdot F_q^{\,2}}$
$? = \frac{1}{\lambda_C^{\,2}}$	$? = \frac{1}{\lambda_C^{\,2} \cdot F_q}$	$? = \frac{1}{\lambda_C^{\,2} \cdot F_q^{\,2}}$
Wavenumber		
$wavn = \frac{1}{\lambda_C}$	$? = \frac{1}{\lambda_C \cdot F_q}$	$? = \frac{1}{\lambda_C \cdot F_q^{\,2}}$
	Time	
	$time = \frac{1}{F_q}$	$? = \frac{1}{F_q^{\,2}}$

Length/Frequency Units 2

OBVERSE UNITS		
		Space-Time
$? = \frac{\lambda_C^{\,3}}{F_q^{\,3}}$	$? = \frac{\lambda_C^{\,3}}{F_q^{\,2}}$	$spct = \frac{\lambda_C^{\,3}}{F_q}$
		Active Area
$? = \frac{\lambda_C^{\,2}}{F_q^{\,3}}$	$? = \frac{\lambda_C^{\,2}}{F_q^{\,2}}$	$acta = \frac{\lambda_C^{\,2}}{F_q}$
		Dynamic Length
$? = \frac{\lambda_C}{F_q^{\,3}}$	$? = \frac{\lambda_C}{F_q^{\,2}}$	$dynl = \frac{\lambda_C}{F_q}$

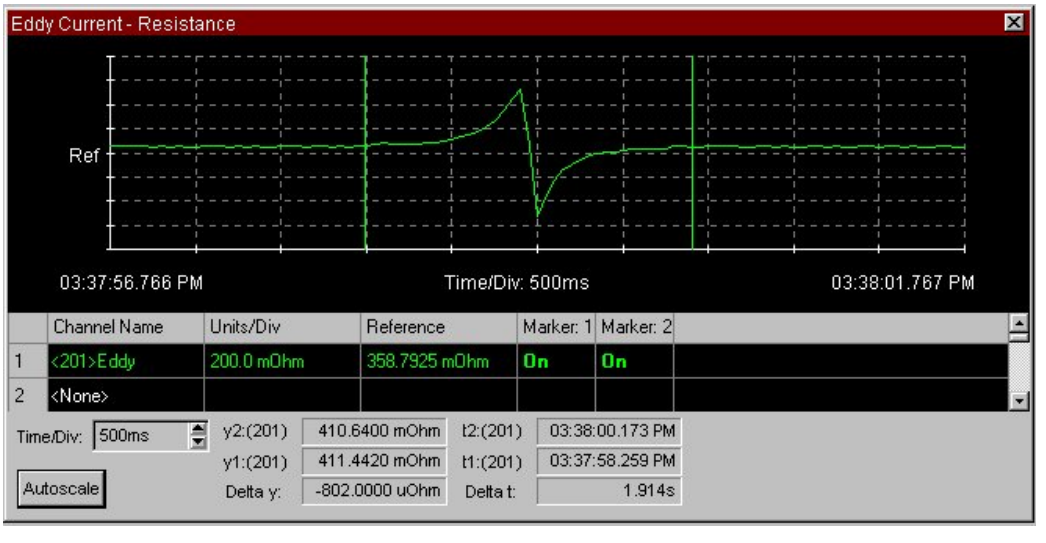
INVERSE UNITS		
$?=\frac{F_q}{\lambda_C^{\ 3}}$	$?=\frac{F_q^{\ 2}}{\lambda_C^{\ 2}}$	$?=\frac{F_q^{\ 3}}{\lambda_C^{\ 3}}$
$?=\frac{F_q}{\lambda_C^{\ 2}}$	$?=\frac{F_q^{\ 2}}{\lambda_C^{\ 2}}$	$?=\frac{F_q^{\ 3}}{\lambda_C^{\ 2}}$
Scalar Wave		
$sclw=\frac{F_q}{\lambda_C}$	$?=\frac{F_q^{\ 2}}{\lambda_C}$	$?=\frac{F_q^{\ 3}}{\lambda_C}$

More Example Calculations



We will repeat the slit tube experiment for eddy current above, but with 1½" pipe and 1½" magnet. The length of the pipe is 11.875" (30.162cm) and the magnet is .375" thick with a .5" diameter hole. The data screen below represents the resistance of the pipe at the terminal while the magnet drops through the slit tube.

The markers are the green vertical lines in the graph and are set at precisely the moment before the magnet drops and immediately after the magnet stops moving. The connections from the HP34970A DAQ unit are simple 2-wire setup since we are only looking for a general picture of the action.



The resistance at the maximum is $880.21m\Omega$ and at minimum is $-162.63m\Omega$ with a reference resistance of $358.79m\Omega$. Therefore, at first we see that the change in resistance is exactly $521.42m\Omega$ both above and below the reference resistance. The interval from the

beginning of the magnet drop to the maximum resistance was $897.4msec$. The interval from the minimum resistance to the moment the magnet stopped moving was $915.8msec$. Between the maximum and minimum moments, $100.8msec$ elapsed.

The magnet fell $30.162cm$ in $1.914sec$. The velocity of the magnet was $15.759\frac{cm}{sec}$. Between the moments the magnet started falling and the maximum resistance, the magnet traveled $14.142cm$.

$$15.759\frac{cm}{sec}\cdot.897.4msec = 14.142cm \tag{6.69}$$

The mean resistance from the moment the magnet started falling to the maximum resistance was $620m\Omega$, so we can calculate the average drag during that interval. First, we need to convert the unit of Ω to the unit of $resn$ by adjusting for the different charge dimensions.

$$620m\Omega\cdot\frac{3.382\times10^{40}}{coul^2} = .620resn \tag{6.70}$$

Notice that the value for Ω is the same as the value for $resn$. It will always be so. The total averaged electrons dragged at any moment along the magnet's fall are:

$$.620resn\cdot14.142cm = 3.614\times10^{10}drag \tag{6.71}$$

Since the strong charge is directly proportional to the angular momentum of the electron (Planck's constant), then strong charge is also a constant of the electron. The strong charge represents as $e_{emax}{}^2$ or as its variable "$chrg$," so the averaged magnetic field in the first $897msec$ of fall is:

$$3.614\times10^{10}drag\cdot chrg = 3.614\times10^{10}mfld \tag{6.72}$$

The $mfld$ unit is the Aether unit, but without accounting for its rotation. Therefore, the unit of $mfld$ is equal to a unit of Aether. As the magnet falls from the start position to the point of maximum resistance, at any given moment along the fall it involves the action of an average 3.614×10^{10} dragging electrons and 3.614×10^{10} Aether units.

Assuming an average magnetic field during the $14.142cm$ of fall, the average magnetic flux would be:

$$\frac{3.614\times10^{10}mfld}{14.142cm} = .62mflx \tag{6.73}$$

Converting $mflx$ to $weber$:

$$.62mflx \cdot 2.112 \times 10^{-4} coul = .62weber \tag{6.74}$$

Notice that once again the value of magnetic flux is exactly equal to the value of *weber* . This holds true for potential, current, and most other units as well.

Of course, a test of the accuracy of this exercise would be the magnet's magnetic flux measurement, which is not available at the time of this writing.

Other tests for the accuracy of quantum measurement units are easily verifiable. For example:

$$\begin{aligned} 5A \cdot 2\Omega &= 5v \\ 5curr \cdot 2resn &= 5potn \end{aligned} \tag{6.75}$$

It makes sense that if the quantum measurements are accurate for Ohm's law, then they will also be accurate for the newly identified quantum measurements presented above.

Kinetic Energy

The following explanation of kinetic energy is not necessarily in agreement with the Standard Model. We present it in order to bring the understanding of kinetic energy into agreement with the Aether Physics Model.

There is not really such a *thing* as energy. Energy is a unit equal to the application of force across distance, or angular momentum at a frequency. Force and angular momentum are the active components of kinetic and potential energy. Force ultimately arises from the Gforce, and angular momentum ultimately arises from dark matter.

When we understand that energy is just a unit of convenience, one can think of all processes in the physical Universe as energy transactions. Although one can choose to see only that portion of a transaction that is of interest, in physics we account for the total transaction. With regard to *kinetic* energy, it is not actually a unit. Kinetic energy is the positive phase of an energy transaction.

According to Newtonian physics, kinetic energy is:

> The energy possessed by a body because of its motion, equal to one-half the mass of the body times the square of its speed.[94]

The kinetic energy equation thus notates as:

[94] The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

$$E_k = \frac{mv^2}{2} \tag{6.76}$$

If E_k is a unit of energy, then equation (6.76) is not a true equation because the two sides do not equal each other. The left side would have twice the value of the right side. Kinetic energy is therefore not a unit, but rather a component of an equation removed from its true context. A proper equation using kinetic energy is:

$$\frac{E}{2} = \frac{mv^2}{2} \tag{6.77}$$

Thus, kinetic energy is just half the energy transaction.

Comprehending kinetic energy is easy when compared to a financial transaction. An employee earns a paycheck. The employer pays the employee. Let us say the paycheck is $300. The total change in wealth between the employer and employee at the moment the check is handed over is $600 (the employer is $300 poorer and the employee is $300 richer.) However, despite the total change of wealth being $600, only $300 changes hands. The $300 paycheck is tangible to the employer before paying the employee, but becomes intangible to the employer after giving it away. Likewise, the employee's earned wages were intangible before getting paid, but tangible after receipt of the check.

Symbolically, the paycheck is kinetic energy. Kinetic energy is tangible, as it is the work done. The employee's accrued wages could be symbolic of potential energy. The potential energy is intangible, being unusable. In the transaction, the total change in wealth is symbolic of total energy. The fact that the employer's wealth decreases by $300 and the employee's wealth increases by $300, thus the economy has a net gain of zero dollars, is indicative of the conservation of energy law.

According to the standard explanation of kinetic energy, it has no direction, being a scalar quantity. Nevertheless, since dimensions comprise all units, and since dimensions have a more primary nature than units, the units must obtain their characteristics from the dimensions.

A falling object has direction toward the ground, which sees a falling body directed toward it. From the perspective of the ground, it is as though the ground were moving toward the falling object.

Length and frequency have direction, nullifying the arbitrary statement that "kinetic energy has no direction." Since length and frequency dimensions do have direction, velocity, and ultimately energy, they must also have direction. Since half-spin onta only see the forward direction of frequency, then all quantum frequency must yield positive time. But the length dimensions can be both positive and negative and thus yield both positive and negative distance.

In the financial analogy, the employer's wealth is decreasing during the transaction while the employee's wealth is increasing. This is true even though the paycheck remains the same value throughout the transaction and moves unidirectionally from employer to employee. The paycheck is merely an instrument of exchange. The employer and employee are the real parties to the transaction.

Similarly, kinetic energy is always associated with moving objects, such as electrons, photons, or swinging balls. The kinetic energy of the object is merely the instrument of the energy exchange between the objects. As in the financial transaction, the total change of energy state is equal to twice the kinetic energy.

One might ask, "What does the employee care about the employer's wealth decreasing by $300?" After all, the employee earned the paycheck and the employer has marketable goods available to sell at a profit.

The significance of tracking the wealth of both the employer and employee is the monitoring of the conservation of cash. The conservation of cash is important to the economy in which the transaction takes place. If employers wrote checks for $300 but employees cashed the checks and received $450 per check, then the banks processing the checks would ultimately collapse. Maintaining the conservation of energy in our physics transactions is just as important, not because the Universe would collapse, but because the Universe will not allow it to be otherwise.

Despite the common assumption that an object on Earth falls toward the ground while the ground remains stationary, there is an acceleration midpoint between the object and the ground. The acceleration midpoint is the point on a line segment, between two objects, where they will collide.

The acceleration midpoint commonly vanishes from equations, because it is so close to the ground. It vanishes due to the relative magnitudes of the mass of the Earth and the mass of an object. However, this acceleration midpoint occurs when the falling object has the mass of, say, the Moon. The mass of a very small object merely indicates a different scale. The Earth moves a very tiny distance toward the falling object while the falling object moves practically all the distance toward the Earth.

Let us assume a mass of 1kg hangs a distance of 10m above the Earth. The gravitational constant of the Earth is $g = 9.8066 \frac{m}{sec^2}$. The potential energy stored in the Earth's gravitational field in relation to the object is then:

$$1kg \cdot 10m \cdot g = 98.066\, joule \tag{6.78}$$

The mass of the Earth is $5.98\times10^{24}kg$. Since the falling object travels nearly all the distance, we can calculate the distance that the Earth will traverse as:

$$\frac{98.066\,joule}{5.98\times10^{24}kg\cdot g}=1.672\times10^{-24}m \tag{6.79}$$

However, the distance traveled by the Earth to the acceleration midpoint is a negative length compared to the distance traveled by the falling object. This would make the total kinetic energy of the Earth with respect to the falling object equal to:

$$-1.672\times10^{-24}m\cdot5.98\times10^{24}kg\cdot g=-98.052\,joule \tag{6.80}$$

So not only does the object have a positive phase kinetic energy of about $98\,joule$, but the Earth also has a negative phase kinetic energy of about $-98\,joule$ at the time of impact. And since the energy is a vector quantity, the Earth's negative phase kinetic energy is 180º out of phase with the falling object. Thus, at the moment of impact the positive kinetic energy of the falling object becomes negative (it decelerates to a stop) and the Earth negative phase kinetic energy becomes positive (and the friction caused by the Earth's immovability generates $98\,joule$ of heat.) The total energy exchange of the system is equal to:

$$E=\frac{E_o}{2}+\frac{E_E}{2} \tag{6.81}$$

where E_o is the kinetic energy of the object and E_E is the kinetic energy of the Earth. The net energy gain of the system is equal to:

$$E=\frac{E_o}{2}-\frac{E_E}{2}=0 \tag{6.82}$$

which is the conservation of energy.

When the two objects collide, the energy phases reverse polarity. If the collision were perfectly elastic, the positive phase kinetic energy, made negative at the collision, would again reverse phase with a negative acceleration and negative kinetic energy. The result would be a positive phase kinetic energy with a change in direction of motion. Even the Earth experiences recoil, but due to its enormous mass compared to that of the falling object, it is on the scale of $10^{-24}m$, which is considerably smaller than the quantum length. The recoil is extremely small, but it cannot erase from the physics.

In terms of the financial analogy, while the employer possesses the check, the

funds the check represents have a positive value in the bank account. However, when the employer transfers the check to the employee, its value must subtract. Therefore, the check transaction reverses the polarity of the funds. If for some reason the employee refuses the check (perfectly elastic collision) then the check reverts to the employer and the value of the funds reverses once again, thus returning them to their positive value.

A good example of energy phase exchange is the swinging ball demonstration known as "Newton's cradle." If one ball lifts and drops, it has positive kinetic energy in relation to the four stationary balls. The positive phase kinetic energy will change to negative phase kinetic energy and eventually transfer the positive phase kinetic energy to the ball at the opposite end, which will cause it to swing up and in the same direction as the first ball. Since the balls are all the same mass, the ball on the end would swing up to the same height as the first ball, assuming no frictional loss.

With all the balls at rest, the energy needed to raise the first ball and start it swinging will exactly equal the total energy lost due to friction as the balls eventually work back to the rest state.

$$E = \frac{E_o}{2} + \frac{E_f}{2} \tag{6.83}$$

where E_f is the energy lost to friction. In other words, the frictional loss is exactly equal to the kinetic energy that dissipates from the system.

As the ball lifts, the source of the lift stores energy in the gravitational field equal to the mass of the ball, times the height raised, times the gravitational force constant of the Earth.

$$-\frac{E}{2} = m \cdot -h \cdot g \tag{6.84}$$

Equation (6.84) is the correct form for the potential energy equation since the energy phase is negative with respect to kinetic energy. The height is negative because length has direction and the ball moves away from the Earth.

When the ball releases, it swings toward the next ball in line. Until impact, the energy stored in the gravitational field increasingly converts into the kinetic energy of the ball. At the moment of contact, the positive phase potential energy that was converted to motion now manifests as positive phase kinetic energy in the collision. Also at the moment of collision, the next ball in line sees an oncoming mass with a velocity, but a velocity of the opposite polarity, so it has a negative phase kinetic energy.

The moment the first swinging ball strikes the next ball in line, the first ball

switches energy polarity with the next ball, which then collides with the middle ball while the first one comes to rest. Since the distance between the second and the middle ball is zero, the energy polarity instantaneously exchanges between them. The middle ball has the same exchange with the fourth ball, and the fourth ball has the same exchange with the ball on the opposite end, which, because it is the last ball, retains the positive energy, transferring it to the gravitational field as the ball moves up and away from the Earth.

As the positive kinetic energy exchanges from ball to ball, and as the end balls move through the air, the balls give up some of the positive phase kinetic energy in the form of friction, similar to a free falling ball striking the Earth in an inelastic collision, but spread out over time.

Eventually the rising ball on the end stores all its positive phase kinetic energy in the gravitational field as positive phase potential energy, thus giving up its motion. The ball comes to rest and, due to the Earth's gravitational force, the energy polarity reverses relative to the original motion as it begins moving in the opposite direction. When the ball swings back toward a collision, it transfers the negative phase kinetic energy along the succession of balls until the second half of the cycle is complete. Again, some of the negative phase kinetic energy is lost to friction.

Because of the conservation of energy law for any full cycle of motion, the positive phase kinetic energy minus the negative phase kinetic energy minus the friction loss will equal zero:

$$\frac{E_p}{2} - \frac{E_n}{2} - \frac{E_f}{2} = 0 \tag{6.85}$$

where E_p is positive phase kinetic energy and E_n is negative phase kinetic energy.

The importance of the energy phase concept is especially apparent when we look at the Standard Model explanation of kinetic energy. In that model the kinetic energy of a falling object collides with the ground, which is assumed to have zero kinetic energy. The net kinetic energy of the two is supposed to be equal to the kinetic energy of the falling object plus the energy converted to friction from the collision. So the equation for kinetic energy in the Standard Model expresses as:

$$\frac{mv^2}{2} + 0 = \frac{mv^2}{2} + \frac{mv^2}{2}$$ [95] (6.86)

or

[95] Edward R. McCliment, Physics (Orlando, Harcourt Brace Jovanovich, Inc., 1984) 150

$$\frac{E_o}{2} + 0 = \frac{E_o}{2} + \frac{E_f}{2} \tag{6.87}$$

and therefore it is assumed that:

$$\frac{mv^2}{2} = E \tag{6.88}$$

However, Newton's cradle demonstrates the actual physics of collisions. Positive phase kinetic energy reverses phase with negative phase kinetic energy at the moment of collision, thus conserving energy. This presents a potential flaw in the way the Standard Model explains kinetic energy.

In conclusion, physics equations invoking kinetic energy must account for both positive and negative phases in order to conserve energy.

Chapter 7

CONSTANTS

The Whole of the Quantum Realm is Constant

All quantum units are also quantum constants. This is possible because the Universe arose from very precise, first measurements. The quantum measurements apply equally to force, matter, and the environment, as they all arise from the same source. A physics system where quantum units are also quantum constants has many advantages, particularly when we examine the qualities of onta and their interactions.

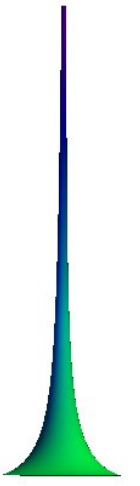
Why should the measurements be quantum at all? If the quantum measurements of onta did not exist, there would be no conservation laws and the Universe would lack a reliable framework. It is because there is a single Aether unit, a single value for electron mass, a single value for proton mass, a single quantum length, a single quantum frequency, a single quantum electrostatic charge, a single quantum strong charge for the electron, and a single quantum strong charge for the proton, that we can make predictions about the Universe at all.

At the level of quantum existence, each interaction will be the same on Earth as in some distant Quasar, star, open space, or galaxy. This means not only will the electron angular momentum be the same in all places and at all times, but also that the velocity of light in a vacuum, the permeability, the conductance, and the permittivity of Aether will be the same.

We can apply quantum measurements in order to understand other quantum units. For example, if potential defines as the amount of work performed per electron strong charge, and we know that electron strong charge has specific geometry, we have a basis for understanding the geometrical requirements of potential at a quantum level. In order to maximize the potential for a given system of electrons (such as in a Tesla coil), it is necessary to magnetically align the electrons in the appropriate direction. Therefore, we focus on coil geometry rather than on increasing the power to produce the correct electron alignment. Without the proper mechanical (geometrical) structures, there are unavoidable losses, as electrons move into a geometry not made for them. The losses manifest

as impedance and ultimately as heat.

In a properly designed Tesla coil[96], the electrons all work in unison, thus there is considerably improved efficiency. Investigation of the work of Nikola Tesla and his Wardencliffe Worldwide Power System (1905) has shown this author that Tesla succeeded in discovering the ideal coil geometries. The ideal geometries would have either a coil designed with a combination flat spiral and tall solenoid secondary coil, or a secondary coil in the shape of an upside down tornado (image at right), or cone. With any of these configurations, the electrons align for maximum current in the flat spiral geometry and maximum potential in the tall solenoid geometry, thus greatly increasing the efficiency of the oscillator.



Analyzing the Constants

We have discussed quantum measurements in terms of their existence and dimensional structure. Now we will analyze specific well-known constants by their quantum measurements.

Quantum measurements show that all true quantum constants have a definite structure, imparted by the Aether. The precision and symmetry of the quantum measurements are stunning, leaving no doubt about the Aether Physics Model's relevance to reality.

Electromagnetic Constant

As noted before, the Aether unit, which is also the electromagnetic constant, is equal to:

$$rmfd = 16\pi^2 \cdot k_C \tag{7.1}$$

The difference between the electromagnetic constant and the Coulomb electrostatic constant is geometry. $16\pi^2$ is equal to two orthogonal spheres $(4\pi \times 4\pi)$. $16\pi^2$ is also equal to 4 toroids $(4 \times 4\pi^2)$, which is the same as 4 circles scanning circles $(4 \times 2\pi \times 2\pi)$. There are other ways to break down the Aether geometrical constant, which demonstrate elsewhere in this book.

Coulomb's Constant

From Coulomb's constant, four other essential constants arise. Coulomb's constant expresses in terms of the motion constant (speed of light), conductance constant, permeability constant, and permittivity constant as:

[96] Tesla Coil - An air-core transformer that is used as a source of high-frequency power, as for x-ray tubes. The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company. The Tesla coil is named after Nikola Tesla, a Serbian born US citizen who also invented the polyphase electric motor.

$$k_C = \frac{c \cdot Cd \cdot \mu_0}{\varepsilon_0} \tag{7.2}$$

In terms of quantum measurements, Coulomb's constant is equal to:

$$k_C = \frac{m_a \lambda_C{}^3 F_q{}^2}{16\pi^2 e_a{}^2} \tag{7.3}$$

where $\frac{m_a}{e_a{}^2}$ is a mass to charge ratio that is constant throughout the Universe and $\lambda_C{}^3 F_q{}^2$ is the double cardioid geometry of space-resonance (the double loxodrome of the Aether unit) that is also constant. The fact that the double cardioid geometry divides by the $16\pi^2$ double loxodrome constant indicates that k_C geometry is spherical in both surface area and solid angle. Coulomb's constant works out to spherical geometry, which explains why it mediates spherical electrostatic charge in Coulomb's law:

$$k_C \frac{e \cdot e}{\lambda_C{}^2} = \frac{forc \cdot \alpha}{2\pi} \tag{7.4}$$

In Coulomb's law, only one dimension of each distributed charge multiplies to determine the force, since two charges will always be orthogonal to each other. This indicates the mechanics of the way charges interact.

Also in equation (7.4) we see a new quantum constant. The quantum constant of $forc$ measures force and is equal to $.034newton$. The correct way to write Coulomb's force law in quantum measurements is:

$$k_C \frac{2\pi \cdot e \cdot e}{\alpha \cdot \lambda_C{}^2} = forc \tag{7.5}$$

When Coulomb's force law (electrostatic force law) notates as in equation (7.5), we can better relate it to the strong force law as follows:

$$rmfd \frac{e_{emax} \cdot e_{emax}}{\lambda_C{}^2} = forc \tag{7.6}$$

Both equations (7.5) and (7.6) thus express in terms of the quantum unit of $forc$. From the simplicity of (7.6), it appears that equation (7.5) is a modification of equation (7.6), accounting for the sphericity of electrostatic charge. It is important to see this special modification of the Aether equations in terms of accommodating sphericity, because a similar occurrence happens at the atomic level when the structure of the nucleus produces sphericity.

Coulomb's constant further analyzes in terms of its geometry, to show how it functions in the Universe. Gforce is a quantum measurement unit and is

equivalent to $1.210\times10^{44}\,newton$.

Coulomb's constant in terms of Gforce is equal to:

$$k_C = \frac{Gforce}{16\pi^2}\cdot\frac{{\lambda_C}^2}{{e_a}^2} \tag{7.7}$$

Gforce itself can be thought of as pressure times area. Push your finger onto a table and feel the pressure times area of force. Now imagine that same force applied to an area between two charges. Pay particular attention to the two different types of forces. In the case of the finger, the force originates from the body to which the finger belongs and is a physical force. In the case of the two charges, the force originates *between* them and is a direct manifestation of Gforce. This is an important distinction regarding the nature of forces.

The Gforce manifests as a surface between two charges or masses. This surface exerts a force that either pushes apart or pulls together. At the quantum level, this surface is a curved surface matching the geometry of the onta. At the macro level, this surface can envision as a flat plane between two objects.

The plane for Coulomb's constant is equal to area per Aether strong charge. In other words, the plane has a specific proportion of length dimensions (area) per strong charge dimensions. This proportion names stroke (page 50).

$$strk_a = \frac{{\lambda_C}^2}{{e_a}^2} \tag{7.8}$$

Coulomb's constant then expresses in terms of Gforce as:

$$k_C = \frac{Gforce}{16\pi^2}\cdot strk_a \tag{7.9}$$

With Coulomb's constant, the double loxodrome geometrical constant $(16\pi^2)$ divides Gforce, thus producing spherical geometry. This suggests that Gforce has double loxodrome geometry, as does the Aether unit.

The $rmfd$ constant expresses in terms of Gforce as:

$$rmfd = Gforce\cdot strk_a \tag{7.10}$$

Constant Speed of Light

We ask the question, "What is it that makes the speed of light constant?" In the Aether Physics Model the answer is, "the quantum measurements."

The speed of light is equal to the quantum length times the quantum frequency.

$$c = \lambda_C \cdot F_q \tag{7.11}$$

The smallest natural length times the highest natural frequency gives the fastest velocity for an onn. However, smaller lengths and higher frequencies do exist via interference waves[97].

Herein lays the key to understanding the speed of light. Primary angular momentum is equal to a ring of mass times motion. The speed of light is essentially the motion constant. It is not the speed it takes to get from one Aether unit to the next; rather it is the speed it takes for an onn to "spin through" one Aether unit. All onta always spin at the speed of light, because Aether spins at the speed of light.

In the Aether Physics Model, matter never moves out of its Aether unit; it always remains in the same region of space-resonance. However, the space resonance is a rotating magnetic field, which allows what we perceive as space-time to move relative to adjoining units of space-time. This is very close to the scenario of Aether presented by René Descartes.

A given Aether unit cannot slip past another Aether unit faster than its spin will allow, thus motion is limited to the speed of light.

Then there is the situation of folding a large portion of Aether fabric by means of an intense strong force attraction. For example, let us imagine a device that stretches a field of Aether (Aether fabric) from the Moon to the Earth. Physical matter existing in one region of space-resonance then crosses over the folded fabric of space-resonance, and the folded space-resonance returns to its normal position. Matter has still traveled less than the speed of light, and yet by skipping over a region of space-resonance it has traveled from the Earth to Moon at a speed that is overall faster-than-light.

Another scenario could demonstrate faster than light speed. Since light speed is determined by an onn spinning through an Aether unit, what if we bypassed the onn altogether and modulated the Aether unit instead?

It may be possible to send a mechanical wave through the Aether by vibrating Aether units using the strong force. Scientists refer to such a disturbance as a gravity wave. The wave would be akin to a sound wave, except that instead of displacing molecules of air, we are displacing space-resonance itself. In addition, since the displacement does not involve onta spinning through Aether, the light speed limitation does not apply.

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[97] "INTERFERENCE. The variation of wave amplitude with distance or time, caused by the superposition of two or more waves." Van Nostrond Company, Inc., Van Nostrand's Scientific Encyclopedia (Princeton: Van Nostrand, 1968) 887.

The mechanism for modulating Aether units will likely involve pulsed magnetic waves. Pulsed magnetic wave technology already exists, so it becomes merely a matter of testing. Pulsed magnetic waves could open the door to many other tests concerning the Aether.

C^2 Constant

What exactly does it mean to square the speed of light? It means nothing as far as velocity is concerned. The speed of light is what it is, a velocity. When the dimensions are changed, it is no longer a velocity. For example, when we multiply velocity by frequency we get the unit of acceleration.

$$velc \cdot freq = accl \tag{7.12}$$

Equation (7.12) could also notate in terms of quantum measurements:

$$\lambda_C \cdot F_q^{\,2} = accl \tag{7.13}$$

One way to see acceleration is as a point gaining length on a line. For example, if an object (representing a point) moves 1 ft in one second and then two feet in the next second (for a total of three feet in two seconds) then the object is accelerating at the rate of one foot per second per second.

Similarly, the unit of sweep is equal to velocity times length:

$$velc \cdot leng = swep \tag{7.14}$$

$$\lambda_C^{\,2} \cdot F_q = swep \tag{7.15}$$

Sweep is the scanning of an area by a line. For example, assume a broom edge is a thin line. Then sweep across the floor. The sweep is the area per time swept by the line of the broom. The sweep could apply to a circle expanding on a surface, like the expanding ring of a water wave when a stone tosses into a still pond. The sweep could apply to a ray having angular velocity around the origin of the ray, or to a line in the form of a circle scanning out a cylinder.

With angular momentum, the line also has mass. A circular line of mass sweeps a tubular spin position area of the Aether.

c^2 is equal to velocity times velocity, which can be written in quantum measurements as:

$$\lambda_C^{\,2} \cdot F_q^{\,2} = temp \tag{7.16}$$

where temp (also "rdtn" for radiation) is the quantum unit of radiation or temperature. In equation (7.16) an accelerating area is swept. In other

words, instead of a point gaining length on a line as in acceleration, there is now a line sweeping an area at an accelerating rate. In the case of energy, the line also has a dimension of mass. So energy appears as a line of mass sweeping an area at an accelerating rate.

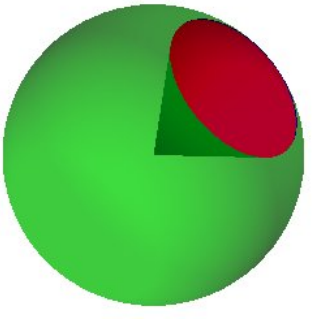
$$(m_e \cdot \lambda_C) \cdot accl = enrg \tag{7.17}$$

For photons traveling at the speed of light, the frame number determines the area scanned at any given time. A frame is one of a sequence of areas designated by its time value.

$$\begin{aligned} f_{rame} &= 1 \\ d_f &= \lambda_C \cdot f_{rame} \\ t_f &= T_q \cdot f_{rame} \\ \frac{d_f{}^2}{t_f{}^2} &= c^2 \end{aligned} \tag{7.18}$$

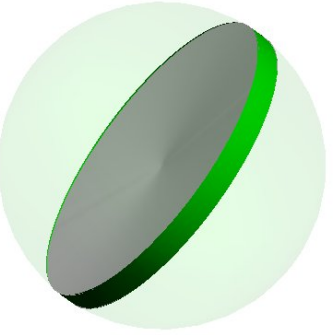
where d_f is the distance of the frame from the origin and t_f is the time of the frame from the origin. At frame equals 1, the total area scanned is equal to $\lambda_C{}^2$. At frame equals 2, the total area scanned is $4\lambda_C{}^2$ and so on. Therefore, c^2 demonstrates as an accelerating area, which is the same thing as saying it is radiating. With temperature, radiation can accelerate outward and then inward as a continual expansion and contraction.

A steradian is a solid angle of a sphere. The case of frame equals 1 shows that the area scanned by c^2 is one steradian of the sphere of the same radius. One manifestation of a steradian would be a cone. The volume of the cone compared to the volume of the sphere is one steradian. In addition, the sphere surface area enclosed by the cone compared to the total surface of the sphere is one steradian.



Steradian as a cone.

The manifestation of the steradian most often encountered at the subatomic level is that of two opposing cones, as in the image below.

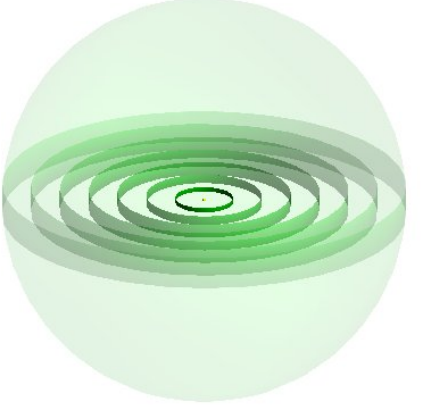


Steradian as the area between two cones.

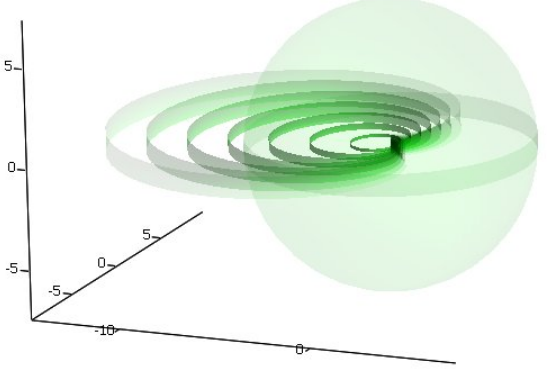
The dark green area in the above graphic represents the steradian of the entire light green sphere. The sphere surface has a solid angle of 1 and the steradian surface a solid angle of $\frac{1}{4\pi}$. The solid angle of 1 is also equal in area to $4\pi r^2$, where r is the radius of the sphere. Therefore, one steradian of the sphere surface area is also equal to the radius of the sphere squared.

$$\frac{4\pi r^2}{4\pi} = r^2 \tag{7.19}$$

In the image on the previous page the steradian, or area scanned by c^2, radiates as an accelerating area. The ratio of the relative area scanned to the corresponding sphere surface will always be $\frac{1}{4\pi}$ regardless of the frame. In the graphic at right, each frame represents as a concentric cylinder. In the empirical case of a photon, which is an expanding electron, the circular cylinder replaces with a cardioid shaped "cylinder" as shown to the left.



Concentric Cylinders of Velocity Squared



Concentric Cardioids of Velocity Squared

Therefore, c^2 is the radiation frame constant. The same analysis applies to the constant speed of sound in a given material, and to other constant velocities.

When the frame constant of radiation applies to the electron mass, it gives the amount of work performed by virtue of the electron's existence. The

electron quantifies by its angular momentum, which is equal to Planck's constant h.

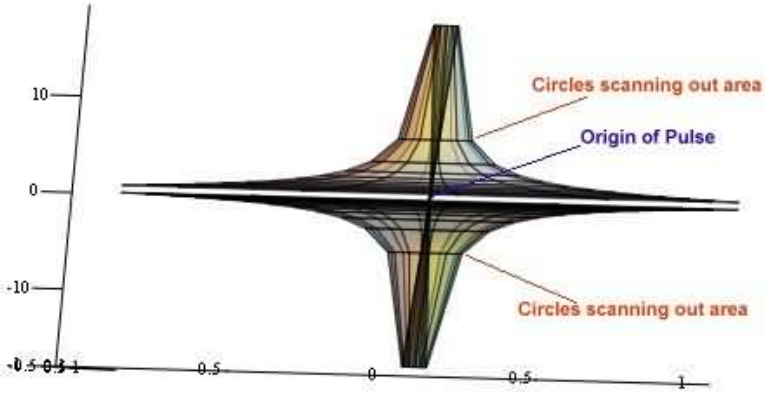
$$m_e \cdot swep = h \tag{7.20}$$

The angular momentum of the electron appears as the mass of the electron sweeping through an Aether spin position. Each quantum moment, the electron repeats this sweeping action. The frequency at which the repetitive sweeping occurs is the quantum frequency:

$$h \cdot F_q = m_e \cdot c^2 = tshankha \tag{7.21}$$

where $tshankha$ is the work performed by the electron in each frame of its existence. In other words, by virtue of its existence the mass of the electron is forever scanning an increasing area, thus manifesting energy.

Within a molecular or atomic substance, the outward expanding radiation collides with similar substances and reflects back toward its source. We can call this process of collisions "temperature," as discussed earlier in the chapter called Units. Following the equations of (7.18), the temperature expands in the angle of the steradian as shown above. However, when other atoms or molecules interact with each other by exchanging photons, resonance occurs. Each particle then oscillates photons among them producing a damped wave, as shown below:



The above graphic is a damped wave caused by the electron-positron pair emitting from an atom. The image uses unequal scales for easier comprehension. If the energy level is high enough, the electron and positron will electromagnetically shoot away as two complete onta in opposite directions. If the energy level is low enough, we see half the electron angular momentum and positron angular momentum expand outward by continuing to share Aether units. These combine to produce a 1-spin photon that will radiate from the source atom in a cardioid pattern as concentric "cylinders." The remaining angular momentum

returns with its Aether unit to the atom to produce another photon.

The electromagnetic force exerted by the emitted photons of the atoms and molecules then transfer momentum to each other causing expansion. We experience this expansion as temperature.

When the intensity of the pair production increases substantially, we experience the emission as gamma rays.

The electron is doing work, as are all onta, all the time. In this sense, the Universe is a sea of energy waiting for utilization. The trick to tapping this sea of energy lies in finding a way to put a load directly on the onta. It is possible that some isotopes, and perhaps even some molecules, have a structure that could allow for the tapping of ***tshankha***. It would be possible if the onta are magnetically aligned (through a crystal structure) in such a way that they produce a natural rotating magnetic field, or perhaps it could occur via the exchange of electrons in one direction around a spherical or cylindrical crystal. Two conductors could tap the energy by placing this natural rotating magnetic field between them.

Orders of Motion

We could say that the first order of motion is the speed of light, or the quantum unit of velocity. In terms of mass, the first order of motion is momentum:

$$momt = m_e \cdot c \tag{7.22}$$

The second order of motion would be energy:

$$enrg = m_e \cdot c^2 \tag{7.23}$$

The third order of motion is then light:

$$ligt = m_e \cdot c^3 \tag{7.24}$$

If we pause to contemplate these various orders of motion, we can see a progression from momentum, to energy, to light. These orders of motion present an increasing intensity in the levels of action.

The Aether involves the fourth order of motion as seen in the Aether electromagnetic constant and in the Newton gravitational constant:

$$rmfd = \frac{mchg \cdot c^4}{accl} \tag{7.25}$$

$$G = \frac{c^4}{m_a \cdot accl} \tag{7.26}$$

The fourth order of motion per acceleration is a constant in both the Aether electromagnetic constant and the Newton gravitational constant. The difference between the two is that in the Aether electromagnetic constant the electromagnetism (mass to charge ratio – $mchg$) has mass, but in the Newton gravitational constant, mass associated with the Aether, is reciprocal mass. Reciprocal Aether mass has a different manifestation than normal mass.

It is fascinating to contemplate the fourth order of motion in the Aether. If energy is a higher order of motion than momentum, and light is a higher order of motion than energy, then the Aether must have a higher order of motion than light.

It is tempting to explain that the Aether does not really have a fourth order of motion because the fourth order per acceleration is equal to the double cardioid unit:

$$\frac{c^4}{accl} = dcrd \tag{7.27}$$

However, as can be seen in equation (7.26), the mass of the Aether times acceleration is equal to the Gforce, which is primary to acceleration. Therefore, the Newton gravitational constant is equal to the fourth order of motion per Gforce.

$$G = \frac{c^4}{Gforce} \tag{7.28}$$

Conductance Constant

The conductance constant offers an opportunity to test the validity of the Aether Physics Model with regard to Classical physics. In Classical physics, all electrically related units other than permeability, permittivity, inductance, capacitance, and conductance express in units with single dimension charge. In the Aether Physics Model, *all* electrically related units express in distributed dimensions of charge.

Therefore, the reciprocal nature of resistance and conductance in Classical physics appears as the reciprocal of magnetic flux and conductance in the Aether Physics Model.

	Aether Physics Model	Classical Physics
Resistance	$resn = \frac{m_e \cdot \lambda_C{}^2 \cdot F_q}{e_{emax}{}^4}$	$R = \frac{kg \cdot m^2}{sec \cdot coul^2}$
Conductance	$cond = \frac{e_{emax}{}^2}{m_e \cdot \lambda_C{}^2 \cdot F_q}$	$G = \frac{sec \cdot coul^2}{kg \cdot m^2}$
Magnetic Flux	$mflx = \frac{m_e \cdot \lambda_C{}^2 \cdot F_q}{e_{emax}{}^2}$	$\lambda = \frac{kg \cdot m^2}{sec \cdot coul}$

Although the Classical physics shows resistance to be the reciprocal of conductance, experiments do not verify this.

> But for reasons related to the different measurement principles and the electrical properties of the skin, the hypothesis of linear relationship between changes in the skin [conductance] and the resulting resistance from the measurement cannot be maintained (Lykken & Venables, 1971). Therefore, it is recommended that researchers use skin conductance only[98].

However, there is evidence to suggest a linear relationship between conductance and magnetic flux:

> It is shown, for normal wall thicknesses, that flux leakage is determined essentially by the wall conductance, defined as the product of wall thickness and wall conductivity.[99]

There are other instances, especially in the field of nanotechnology, where conductance has a linear, reciprocal relationship to magnetic flux.

At first glance, it may appear that classical physics expresses resistance in terms of distributed charge. However, it readily appears from Ohm's law that this is not the case. Resistance is the result of potential divided by current. Both potential and current in classical physics express in terms of single dimension charge. Equation (7.29) shows that the classical dimensions of potential divided by the classical dimensions of current equal the classical dimensions of resistance.

$$\frac{\left(\frac{kg \cdot m^2}{sec^2 \cdot coul}\right) potential}{\left(\frac{coul}{sec}\right) current} = \left(\frac{kg \cdot m^2}{sec \cdot coul^2}\right) resistance \qquad (7.29)$$

The fact that $resn$ appears in the Aether Physics Model with charge to the fourth power shows that resistance is a unit determined by two separate onta working against each other.

In equation (7.2), the conductance constant shows to be a factor of Coulomb's constant. In quantum measurements, the conductance constant notates as:

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[98] Stefan Schmidt and Harald Walach, "Electrodermal Activity (Eda) -- State-of-the-Art Measurement and Techniques for Parapsychological Purposes," The Journal of Parapsychology 64.2 (2000): 139

[99] Fowler, C.M. Losses in magnetic flux compression generators: Part 2, Radiation losses (Los Alamos National Lab., NM (USA), Report number LA-9956-MS-Pt.2, 1988 Jun 01)

$$Cd = \frac{e_{emax}^{\ 2}}{m_e \lambda_C^{\ 2} F_q} \tag{7.30}$$

Conductance of the Aether is also equal to:

$$Cd = \frac{e_{emax}^{\ 2}}{h} \tag{7.31}$$

The variable h is Planck's constant and represents the angular momentum of the electron. Aether conductance is also equal to other expressions of strong charge to primary angular momentum.

$$Cd = \frac{e_{pmax}^{\ 2}}{h_p} \tag{7.32}$$

$$Cd = \frac{e_a^{\ 2}}{h_a} \tag{7.33}$$

where h_p and h_a are the angular momentum of the proton and Aether, and $e_{pmax}^{\ 2}$ and $e_a^{\ 2}$ are the strong charge of the proton and Aether. This is just one of many demonstrations of the exact mass to strong charge ratio, which is consistent throughout the Universe. Wherever strong charge appears, it is always exactly proportional to the mass within the angular momentum that produces it, and therefore it is quantum[100].

The Standard Model of particle physics does not recognize conductance as an essential constant. This might prompt one to ask, why bother? As shown in the Aether Physics Model, the conductance constant is essential for understanding the strong charge of the onta. The understanding of strong charge in turn reveals the relationships of the strong nuclear force, Van der Waals force, Casimir force, plasmas, and other phenomena.

An essential use of the conductance constant appears in the strong charge equation:

$$e_{emax}^{\ 2} = h \cdot Cd \tag{7.34}$$

The same form of equation holds for any onn with angular momentum. The angular momentum of the proton in the Aether Physics Model is similar to the angular momentum of the electron, with the exception that it calculates with the mass of the proton.

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[100] Experiments have shown that a quantum conductance does exist in multiwalled carbon nanotubes. In one experiment the quantum conductance was shown to be, "The conductance of arc-produced MWNTs is one unit of the conductance quantum $G_0 = 2e^2/h = (12.9 \text{ kilohms})^{-1}$." This value differs from the theoretical value by a factor of 2.725. Frank, Stefan, Poncharal, Philippe, Wang, Z. L., Heer, Walt A. de Carbon Nanotube Quantum Resistors Science 1998 280: 1744-1746

$$h_p = m_p \lambda_C{}^2 F_q \tag{7.35}$$

$$e_{pmax}{}^2 = h_p \cdot Cd \tag{7.36}$$

Due to the incorrect assumption in Classical physics that resistance is the reciprocal of conductance, the science of psychophysiology has suffered a crucial setback. Scientists assume reciprocal measured skin resistance equals skin conductance, even though experiment shows this to be false. Thus, an incorrect understanding of the relationship between conductance and resistance has hindered scientists from advancing in their understanding of the nature of consciousness. (On page 272, consciousness introduces with respect to the dynamic, living Aether.)

Permeability Constant

The permeability constant is also a part of Coulomb's constant and the *rmfd* constant. In quantum measurements, permeability expresses as:

$$\mu_0 = \frac{m_a \cdot \lambda_C}{4\pi \cdot e_a{}^2} \tag{7.37}$$

Notice the mass to strong charge ratio of Aether $\left(\frac{m_a}{e_a{}^2}\right)$. However, any mass to strong charge ratio such as $\frac{m_e}{e_{emax}{}^2}, \frac{m_p}{e_{pmax}{}^2}, or \frac{m_n}{e_{nmax}{}^2}$ would do. This is because the mass to strong charge ratio is always constant.

Permeability is a quality of Aether unit that refers to the degree it can be penetrated or permeated. Permeability is the quality of Aether that "grabs" onto strong charge as it passes through. Think of water permeating a piece of cloth. The water can pass through the cloth, but there is a certain amount of drag imposed on its movement. Aether permeability has this type of effect on strong charge.

The constant of permeability is a part of double loxodrome geometry due to the 4π constant.

Permittivity Constant

Another component of Coulomb's constant and the *rmfd* constant is the permittivity constant.

$$\varepsilon_0 = \frac{4\pi \cdot e_a{}^2}{m_a \lambda_C{}^3 F_q{}^2} \tag{7.38}$$

Once again, 4π multiplies the strong charge thus indicating that permittivity is a part of double loxodrome geometry. This is why permeability and permittivity frequently appear together in mathematical expressions of

the Aether.

Aether permittivity (absolute) defines as "the ratio of the electric displacement of a medium to the electric force producing it.[101]" As seen from the dimensions, the permittivity constant of the Aether includes the full dimensions of space-resonance (double cardioid), which can be thought of as a cavity in which onta reside. The cavity times the electromagnetic constant (mass to strong charge ratio) also relates as capacity for electromagnetic charge. The degree to which electromagnetic charge can fill this capacity is the permittivity.

One might notice, however, that the dimensions are reciprocal in equation (7.38), that is, the double cardioid constant is in the denominator as is the mass to charge ratio. However, since permittivity itself has a reciprocal relationship in the Aether unit, it works out that permittivity *is* its electromagnetic capacity.

$$rmfd = \frac{c \cdot Cd \cdot \mu_0 \cdot \dfrac{m_a \lambda_C{}^3 F_q{}^2}{4\pi \cdot e_a{}^2}}{16\pi^2} \tag{7.39}$$

Planck's Constant

Just like Coulomb's constant, the Newton gravitational constant, speed of light constant, speed of light squared constant, permeability constant, and permittivity constant, the Standard Model of particle physics essentially claims that Planck's constant is a constant of convenience that happens to show up in many places.

The following quote from H.A. Lorentz in a book by James Murphy and Max Planck[102] illustrates many of the areas where Planck's constant applies.

> "We have now advanced so far that this constant (Planck's universal h) not only furnishes the basis for explaining the intensity of radiation and the wavelength for which it represents a maximum, but also for interpreting the quantitative relations existing in several other cases among the many physical quantities it determines. I shall mention only a few; namely, the specific heat of solids, the photo-chemical effects of light, the orbits of electrons in the atom, the wavelengths of the lines of the spectrum, the frequency of the Roentgen rays which are produced by the impact of electrons of given velocity, the velocity with which gas

[101] C. F. Tweney and L. E. C. Hughes, eds., Chambers's Technical Dictionary (Englewood Cliffs, NJ: W.& R. Chambers, 1958) 629.

[102] Max Planck, Where Is Science Going?, trans. James Murphy, 1st ed. (New York: Norton, 1932) 26-7.

> molecules can rotate, and also the distances between the particles which make up a crystal. It is no exaggeration to say that in our picture of nature nowadays it is the quantum conditions that hold matter together and prevent it from completely losing its energy by radiation. It is convincingly clear that we are here dealing with real relations because the values of h as derived from the different phenomena always agree, and these values differ only by slight shades from the number which Planck computed twenty-five years ago on the experimental data that were then available."

According to Max Planck…

> …the laws of thermodynamics are only of a summary and statistical nature and can give only summary results when applied to electronic processes in the atom. Now if the quantum of action has the significance which has come to be ascribed to it to-day in thermodynamics it must make itself felt also in every single process within the atom, in every case of emission and absorption of radiation and in the free dispersion of light radiation[103].

Action is the attribute of a real thing, not of convenience constants. If there is a quantum of action, then there is something doing the action. There are only three stable forms of onta in the atom that could be candidates for the quantum of action. These are the electron, proton, and neutron. Since all the phenomena associated with Planck's constant are *electronic* processes, then the only logical candidate among these three is the electron. It is a very reasonable postulate that Planck's constant directly quantifies the electron. Moreover, since Planck's constant is in the unit of angular momentum, it is reasonable to state further that Planck's constant refers directly to the angular momentum of the electron.

God did not design the Planck constant just to help Max Planck, Louis de Broglie, and Albert Einstein convert energy to frequency in the equation:

$$E = h \cdot f \tag{7.40}$$

Further still, Einstein may have applied Max Planck's constant directly to the energy of photon radiation, but Einstein did not discover, nor did he quantify, a quantum photon. Albert Einstein claimed to have quantified the photon, but what he called the photon was not quantum at all. Einstein merely stated what others had stated, that Planck's constant (angular momentum of the electron) times frequency yields the amount of work performed by the electron:

[103] Max Planck, Where Is Science Going?, trans. James Murphy, 1st ed. (New York: Norton, 1932) 59.

> Within a few years after its promulgation Einstein applied the quantum theory to explain the constitution of light and showed that light follows the same process as heat radiation and is emitted in parcels or quanta, called photons[102].

Einstein also made the empirical observation that everyone else did, that light travels at the speed of light, but he never made the connection that the photon actually quantifies as Planck's constant times the speed of light. Nor did he realize that light was equal to the photon times frequency.

A look at the Planck constant in terms of quantum measurement reveals clearly that Planck's constant refers specifically to the electron. The angular momentum of the electron is equal to the mass of the electron times its sweep.

$$h = m_e \lambda_C{}^2 F_q = m_e \cdot swep \tag{7.41}$$

$$h = 6.626 \times 10^{-34} \frac{kg \cdot m^2}{sec} \tag{7.42}$$

In the Aether Physics Model, the photon and the electron closely relate to each other, just as empirical evidence show. The photon unit is equal to:

$$phtn = h \cdot c \tag{7.43}$$

What could be simpler and easier to understand? A photon is electron angular momentum that is exploding outward at the speed of light. Light defines as photons produced at a given frequency:

$$ligt = phtn \cdot freq \tag{7.44}$$

In the Aether Physics Model, we are dealing with cause and effect. Electrons define exactly as the data shows, as primary angular momentum. Photons mathematically define from the electrons that produce them. Energy appears as a unit of work, not as an object equal to a dimension. Mass is seen as a dimension, and not as matter. All the functions within the APM are clean, mathematically and geometrically correct, and modeled precisely.

With an accurate electron structure to work with, we may reasonably posit that the other form of stable matter, the proton, is similarly structured.

Newton Gravitational Constant

$$G = \frac{\lambda_C{}^3 F_q{}^2}{m_a} = \frac{dcrd}{m_a} \tag{7.45}$$

The Newton gravitational constant is equal to double cardioid per Aether mass.

The gravitational constant is equal to:

$$G = 6.672 \times 10^{-11} \frac{m^3}{kg \cdot sec^2} \tag{7.46}$$

and can be represented as:

$$G = 6.672 \times 10^{-11} \frac{m^2}{kg^2} newton \tag{7.47}$$

Just as the electrostatic and electromagnetic constants represent as a surface of distributed *charge* through which the Gforce acts, the gravitational constant represents as a surface of distributed *mass* through which the Gforce acts. It is likely that this "surface" actually curves at the quantum level, although it models as a flat surface at the macro level.

In the Coulomb constant and electromagnetic constant, the Gforce acts from a surface per charge named "stroke." The stroke so names because it has a forward and backward component, or a dipole of electromagnetism. Linear mass is only one dimension. The gravitational force only extends in one vector relative to the type of mass acted upon. As a result, the gravitational force is attractive for like types of matter and repulsive for matter/anti-matter interactions.

The surface from which the gravitational constant acts, describes in terms of "reach" (Rch). Rch is equal to:

$$Rch = \frac{\lambda_C^{\ 2}}{m_a^{\ 2}} = 5.513 \times 10^{-55} \frac{m^2}{kg^2} \tag{7.48}$$

With similarity to the Coulomb and $rmfd$ constants, the Newton gravitational constant expresses in terms of Gforce:

$$G = Gforce \cdot Rch \tag{7.49}$$

A Gforce that is common to both electromagnetism and gravity also links together the two forces. Electromagnetism cannot convert to gravity because electromagnetism and gravity are already two aspects of the same thing. Think about a rectangular sign. If you look at the broad side of the sign, you see an area, but if you turn the sign 90 degrees, you see only the edge of the sign, which appears as a line. The Coulomb and $rmfd$ constants have surface geometry, and the Newton gravitational constant has linear geometry .

Ultimately, there is only one force in the Universe, the Gforce. As shown in this model, the Gforce acts upon electrostatic charge, electromagnetic charge, and mass in different ways, appearing to human perception as three different kinds of force. If we were to see the Sun through three

different colors of glass, we would be clever enough to realize that the Sun is not really three different colors.

Fine Structure Constants

In the early days, while developing the Aether Physics Model, I read a web page by Dr. James G. Gilson[104] that inspired me to look into the fine structure constant. The theories and equations presented by various authors all based upon numerological treatments, which left me wondering about the physical cause of the fine structure constant.

After a few hours of manipulating the new value for strong charge, which I had calculated from the conductance constant, I found an incredibly simple and highly instructive equation for the physical origin of the electron fine structure. Within a few minutes, I had also calculated the fine structures of the proton and neutron as well. It was not until a few weeks later that I realized the fine structure equation was really the Unified Charge Equation, which is the foundation of the Unified Force Theory. I reasoned that the fine structure constant is the proportion between a subatomic onn's elementary charge and its equivalent spherical strong charge, shown below.

The Fine Structure Constant designates by alpha (α) and defines by NIST as:

$$\alpha = \frac{e^2}{4\pi\varepsilon_0 \hbar c} \tag{7.50}$$

The value works out to:

$$\alpha = 7.297\ 352\ 568 \text{ x } 10^{-3} \tag{7.51}$$

But the Fine Structure constant is not directly related to permittivity as equation (7.50) seems to suggest. It is a function of the conductance of the Aether, and more specifically, it represents the proportion of spherical electrostatic charge to the equivalent spherical electromagnetic charge.

$$\alpha = \frac{e^2}{8\pi \cdot h \cdot Cd} \tag{7.52}$$

or,

$$\alpha = \frac{e^2}{8\pi \cdot e_{emax}{}^2} \tag{7.53}$$

The strong charge has a steradian angle of the 1 solid angle of electrostatic

[104] James G. Gilson, Fine Structure Constant, The fine structure constant, a 20th century mystery, http://www.maths.qmul.ac.uk/~jgg/page5.html

charge. The strong charge results from half-spin angular momentum spinning through the Aether unit, and therefore the strong charge has half-spin. To bring the strong charge to the same geometry as the electrostatic charge, 2 times 4π multiplies the strong charge. Thus, the half-spin electromagnetic charge converts to one-spin, and the steradian angle of strong charge converts to a spherical angle of 1, making both expressions geometrically balanced. That leaves the fine structure as the proportion between the electrostatic charge and equivalent spherical strong charge.

So the Aether Physics Model precisely and fundamentally describes the fine structure constant of the electron. However, the same structure further applies to the other forms of stable matter. Equation (7.52) is equal to the Unified Charge Equation:

$$e^2 = 8\pi\alpha \cdot {e_{emax}}^2 \tag{7.54}$$

Unified Charge Equation for Electron

The application of the same method to the proton and neutron quickly resulted in fine structures for both onta.

$$p = \frac{e^2}{8\pi \cdot {e_{pmax}}^2} \tag{7.55}$$

$$p = 3.974 \times 10^{-6} \tag{7.56}$$

$$n = \frac{e^2}{8\pi \cdot {e_{nmax}}^2} \tag{7.57}$$

$$n = 3.969 \times 10^{-6} \tag{7.58}$$

where p is the proton fine structure and n is the neutron fine structure. As shown earlier, the angular momentum times the conductance constant gives the electromagnetic charge. Multiplying the electromagnetic charge by 8π yields the equivalent geometry of a sphere. Each onn would necessarily then have its own fine structure constant.

g-factor Constants

Free Electron g-factor

Because the electron has an electric charge and an intrinsic rotational motion, or spin, it behaves in some respects like a small bar magnet; that is, it is said to have a magnetic moment. Because the electron also has mass, it behaves in some respects like a spinning top; that is, it is said to have spin angular momentum. The *g* factor of the electron is defined as the ratio of its magnetic moment to its spin angular momentum. This factor is nominally 2 and was first

measured with high accuracy during the period from 1961 to 1963. Using electric and magnetic fields, electrons were trapped with spins prealigned in a particular direction for a known length of time. The *g* factor was then obtained from the change in spin direction during the trapping period and the magnitude of the trapping magnetic field. Recent improvements in this basic method of measuring the *g* factor reduced the original 0.027 parts per million uncertainty obtained earlier to 0.003 parts per million.[105]

According to NIST, the g-factor of the electron notates as:

$$g_e = \frac{2\mu_e}{\frac{e\hbar}{2m_e}} \tag{7.59}$$

and has the value of:

$$g_e = -2.002\ 319\ 304\ 3718 \tag{7.60}$$

and NIST gives the magnetic moment of the electron as:

$$\mu_e = -928.476\ 412 \times 10^{-26}\ \text{J T}^{-1} \tag{7.61}$$

The quantum measurements equation for electron magnetic moment in single charge dimensions is:

$$\mu_e = g_e \lambda_C{}^2 F_q \frac{e \cdot e_{emax}{}^2}{8\pi \cdot e_{emax}{}^2} \tag{7.62}$$

Note that magnetic moment defines by the g-factor in equation (7.62). Now look again at the NIST equation (7.59) above for the g-factor of the electron. The g-factor defines by the magnetic moment. This is a serious error in physics, wherein the g-factor and the magnetic moment presume to define each other. Later you will see the Aether Physics Model definition of the electron and proton g-factors.

The electron gyromagnetic ratio as defined by NIST is:

$$\gamma_e = \frac{2|\mu_e|}{\hbar} \tag{7.63}$$

$$\gamma_e = 1.760\ 859\ 74 \times 10^{11}\ \text{s}^{-1}\ \text{T}^{-1} \tag{7.64}$$

According to NIST, the electron gyromagnetic ratio is a positive number because it takes the absolute value of electron magnetic moment, which

[105] NIST – Introduction to the constants for non-experts 1940-1960
http://physics.nist.gov/cuu/Constants/historical3.html

was negative due to the assumed negative g-factor for the electron.

The negative value for the g-factor supposedly derived from the negative charge of the electron. However, what logic would then formulate the neutron g-factor as negative? The neutron is neutral. Can the electron and neutron g-factors be negative from different causes? That does not seem likely. As seen in the discussion on magnetic moment, there is no mathematical reason for the electron g-factor to be negative, but there is a possible reason for the neutron g-factor to be negative. Because there is no logic in making the electron g-factor negative, the electron g-factor in the Aether Physics Model is positive.

While researching the cardioid geometry of the Aether in the z-axis of time, we observed the Phi and phi proportions within it. Phi is the Golden Ratio and phi is its reciprocal. It could turn out that the electron g-factor is due to an offset of the loxodrome at the poles of the Aether unit. Nevertheless, it is not clear that this is what the g-factor refers. It is interesting that the electron g-factor expresses as:

$$\frac{g_e}{2} = \frac{1}{\sin(Phi)} \tag{7.65}$$

and the proton g-factor as:

$$\frac{g_p}{2} = \frac{Phi}{\sin(phi)} \tag{7.66}$$

Using the symbol Φ for Phi and ϕ for phi, we could possibly solve for the neutron g-factor thus:

$$\frac{g_n}{2} = \sin(1)\frac{\sin(\phi)}{\left[\Phi\left(-\sin(\Phi)+\sin\left(\Phi\right)\cdot\cos\left(\Phi\right)^2+\sin\left(1\right)-\sin\left(1\right)\cdot\cos\left(\Phi\right)^2\right)\right]} = -3.837 \tag{7.67}$$

In NIST equations (7.59) and (7.62) the electron g-factor and electron magnetic moment define each other. Modern science has not yet found the physical cause of the g-factor. In the Aether Physics Model, g-factor quantifies by an expression that may discover its physical cause in Aether geometry.

As described in the section on magnetic moment, NIST appears to have erred on the value of the neutron magnetic moment and neutron g-factor, as well, due to an apparently incorrect view of subatomic structure. Essential equations for understanding a true origin of g-factor appear in this section. A more exhaustive analysis will demonstrate the principles in detail. The claim by NIST to have determined the g-factor to within .003 parts per million would seem to discredit equations (7.65) and (7.66), as these equations calculate to a value accurate only to the thousandths of the NIST values. However, if NIST is wrong about the neutron g-factor

and neutron magnetic moment, it may be wrong about the accuracy of the g-factor as well. But even if NIST is correct, the small error may be due to a small comma meantone tuning factor similar to the Pythagorean comma meantone adjustment in a music scale.

The Aether Physics Model g-factor in onta has a proportional relationship to the mass and magnetic moment of other onta. For example:

$$\frac{g_p \cdot m_e \cdot emag}{g_e \cdot m_p \cdot pmag} = 1 \tag{7.68}$$

This is true when using the Aether Physics Model value for the neutron g-factor:

$$\frac{-3.831359 \cdot m_e \cdot emag}{g_e \cdot m_n \cdot nmag} = 1 \tag{7.69}$$

Now let's see what happens when we substitute the magnetic moment values from the Standard Model. When comparing the electron to proton values we get unity:

$$\frac{g_p \cdot m_e \cdot \mu_e}{g_e \cdot m_p \cdot \mu_p} = 1 \tag{7.70}$$

But when we compare the Standard Model values for the g-factors and magnetic moments between the neutron and electron we get:

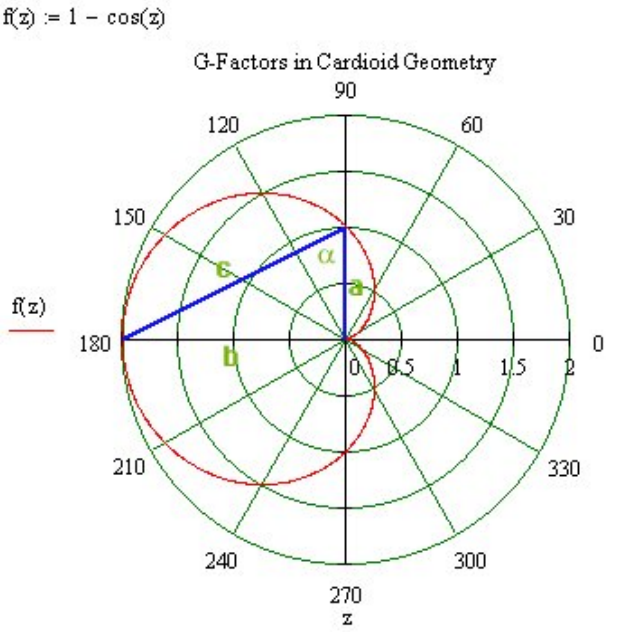
$$\frac{-3.82609 \cdot m_e \cdot \mu_e}{g_e \cdot m_n \cdot \mu_n} = 0.998627 \tag{7.71}$$

Even using the Aether Physics Model g-factor does not get unity, but it does get closer than the Standard Model g-factor:

$$\frac{-3.831359 \cdot m_e \cdot \mu_e}{g_e \cdot m_n \cdot \mu_n} = 1.000002 \tag{7.72}$$

This may be evidence in favor of the Aether Physics Model's proportionally derived neutron g-factor.

To see how the g-factor relates to the onn geometry, we can look at a graph of the Compton function, which shows the geometry of the Aether paths taken by photons as viewed from the z-axis of time.



According to equation (7.65) the electron g-factor is equal to:

$$g_e = \frac{2}{sin(Phi)} \tag{7.73}$$

In the graph above, triangle side b is a unit length, equal to the radius of the sphere on which the cardioid path rests. As can be seen, side a is half the unit length and side c is the hypotenuse of right triangle $\triangle abc$. $\triangle abc$ is a special form of right triangle where side b is twice side a, which we can call a Phi triangle (it is not a Golden triangle).

The Phi triangle is so named because in a unit triangle where $b = 1$, then

$$c + a = Phi \tag{7.74}$$

and

$$c - a = phi \tag{7.75}$$

where Phi is the golden ratio and phi is its reciprocal. This is easily proved by substituting the Pythagorean expression for c and a in terms of unit length b:

$$\sqrt{b^2 + \left(\frac{b}{2}\right)^2} + \frac{b}{2} = Phi \tag{7.76}$$

Since $b = 1$, we get:

$$\sqrt{1+\frac{1}{4}}+\frac{1}{2}=Phi \tag{7.77}$$

$$1.118+.5=1.618=Phi \tag{7.78}$$

The value for phi similarly reduces to:

$$1.118-.5=0.618=phi \tag{7.79}$$

Therefore, the electron g-factor is equal to:

$$\frac{2}{\sin(c+a)}=g_e \tag{7.80}$$

And the proton g-factor is equal to:

$$\frac{2(c+a)}{\sin(c-a)}=g_p \tag{7.81}$$

Does the sine of $c+a$ or $c-a$ have a real meaning? While it presents interesting possibilities regarding similarities in the g-factor equation structure and the Compton function structure, which pertains particularly to photons, we draw no conclusions at this time with regard to the Phi based g-factor equations and Aether. It may be possible to link the two, but the work remains unfinished. A linking of the g-factor equation with Aether would greatly assist the understanding of magnetic moment and gyromagnetic ratio.

Gyromagnetic Ratio

The gyromagnetic ratio of the electron expresses in quantum measurements with single dimension charge as:

$$\gamma_e=\frac{e}{m_e}\frac{g_e}{2} \tag{7.82}$$

Converted to distributed dimensions of charge the electron gyromagnetic ratio expresses as:

$$egmr=\frac{e^2}{m_e}\frac{g_e}{2} \tag{7.83}$$

The analysis of gyromagnetic ratio is that the interaction of electrostatic charge of the Aether per mass of the onn times the offset of spin for a half-spin onn (as quantified by the g-factor), causes the onn to precess.

Similarly, quantum measurements apply to the proton and neutron gyromagnetic ratios.

$$pgmr = \frac{e^2}{m_p}\frac{g_p}{2} \tag{7.84}$$

$$ngmr = \frac{e^2}{m_n}\frac{g_n}{2} \tag{7.85}$$

where the neutron g-factor is the Aether Physics Model neutron g-factor and not the NIST neutron g-factor.

The gyromagnetic ratio of any onn is then a function of its electrostatic charge to mass ratio and spin position offset, or its precession.

Aether Pressure and Density

The velocity of a wave in any medium is equal to the square root of the pressure divided by the mass density of the medium. Since we already know the velocity of light through the Aether, we can derive the pressure and mass density of the Aether.

$$c^2 = \frac{pres}{masd} \tag{7.86}$$

Using quantum measurements the pressure is equal to:

$$pres = \frac{m_e F_q^{\,2}}{\lambda_C} = 5.732\times10^{21}\,\frac{kg}{m\cdot sec^2} \tag{7.87}$$

while the mass density is:

$$masd = \frac{m_e}{\lambda_C^{\,3}} = 6.377\times10^{4}\,\frac{kg}{m^3} \tag{7.88}$$

However, the mass density in equation (7.88) is for the electron. The mass density and pressure for the Aether is:

$$\begin{aligned} masd_a &= \frac{m_a}{\lambda_C^{\,3}} = 2.288\times10^{50}\,\frac{kg}{m^3} \\ pres_a &= \frac{m_a F_q^{\,2}}{\lambda_C} = 2.056\times10^{67}\,\frac{kg}{m\cdot sec^2} \end{aligned} \tag{7.89}$$

At first, it seems improbable that such a mass density could exist. However, the mass associated with the Aether that acts gravitationally is reciprocal to physical mass; therefore, it is the *ability* of the Aether to produce mass density. Frequency is the reciprocal of time and relates to it but is not the same thing, and the same holds true for the reciprocal of mass. Reciprocal mass defines poorly in the Standard Model, if at all.

Chapter 8

ANGULAR MOMENTUM

Modern physics describes electrons and protons as particles, but it does not stop there. Physicists also describe force carriers as particles, and identify a host of particles that remain undetected such as axions, photinos, selectrons, and gravitinos[106]. Supposedly, the strong force is due to the exchange of particles. The photon designates a particle. The neutrino is a particle. Everything is a particle. It is as though the makers of Legos[107] developed modern physics.

> The addition of all these particles has helped in one respect: it seems to be giving us an understanding of renormalization. For years scientists have been getting around the difficulties of infinities in their theories by subtracting them out—in essence, by sweeping them under the rug. The method they used worked, but they were not quite sure why. With supergravity it seems as if we may be able to get around renormalization. Crudely speaking, it turns out that for each infinity in the theory that is caused by a boson there is an infinity of the opposite sign caused by a fermion, and they cancel one another.
>
> Despite the promise of explaining renormalization, the theory does have difficulties. The major one is all the particles that are predicted by it—selectrons, winos, and so on. They have never been found in nature. Scientists, however, have an argument for this: They say that they might have been generated with so much mass that we have not yet been able to observe them. But when we get larger accelerators we will be able to.[108]

[106] It suffices for our purposes to notice that there is no empirical evidence that any of these particles exist; they are discussed in elementary particle physics because they appear in theories that are untested but attractive generalizations of successful theories, and they are considered in cosmology because they have some interesting and conceivably beneficial properties. Morton S. Roberts, ed., Astronomy & Astrophysics (Washington, DC: American Association for the Advancement of Science, 1985) 285.

[107] LEGO is a trademark of the LEGO Group.

[108] Barry Parker, Einstein's Dream: The Search for a Unified Theory of the Universe (New York: Plenum Press, 1986) 265.

In the Aether Physics Model, primary angular momentum is the absolute primary unit of matter. Yes, we can shatter the primary angular momentum of protons and neutrons and we can observe that the dying onta fall apart in regular patterns and these ephemeral pieces can designate as quarks, for whatever it is worth. And just for amusement, one can label characteristics of the quarks as colors, flavors, and up/down. However, when we understand the living nature of Aether, we find that particle smashing is neither instructive nor amusing.

Primary angular momentum absorbs into the Aether via the Casimir effect (page 213). It appears to draw from a huge sea of primary angular momentum (dark matter), which coexists with quantum Aether units. The so-called "Big Bang" appears to be nothing more than the continual appearance of Aether units, into which a quantity of dark matter flows. The Aether units themselves have a non-material origin.

Imagine the Aether units as measuring cups, and imagine angular momentum as something measured. The dynamic Aether unit can hold a specific measure of angular momentum in each of its four spin positions.

The angular momentum itself appears to be a specific mass that sweeps an area in a quantum time. Essentially, there are only two stable mass quantities existing in the normal portion of the Universe, those of the electron and those of the proton. These two mass values are very specific and are unchanging. But why are these masses what they are? Is there some kind of logical order underlying the proton to electron mass ratio?

The onta gap number is a potential clue, which may or may not actually quantify the proton to electron mass ratio (also the anti-proton to positron ratio). The onta gap number seems to predict the ratio of the proton to electron mass to within .00035% accuracy. This may seem like a good bet at first, but the masses of the electron and proton claim to be far more accurate according to scientific standards. So the onta gap number introduces for now as a curiosity.

$$\frac{2^5\pi^3\left(\frac{\sqrt{5}+1}{2}\right)^2}{\sqrt{2}} = 1.83679157\times10^3 \qquad (8.1)$$

We have already seen how Phi seems to relate to the onta g-factors (page 170). Equation (8.1) seems to show that the proportion of *Phi* squared is involved in the ratio of proton to electron mass. Perhaps the g-factors and mass ratios are related in geometry and proportion?

The Aether constant of $16\pi^2$ notates as $2^4\pi^2$. The constant $2^5\pi^3$ could be a further progression in the geometrical constants (page 282) that leads to a "higher" level of existence. Whatever it was that caused mass to appear as a dual quantum in the Aether, it may exist with a geometry represented

by $2^5\pi^3$. The $\sqrt{2}$ may in some way represent the orthogonality of the masses. There may be nothing to the onta gap number, or it may be a clue. It is speculation at this point.

Whatever may be the causes of mass and the Aether units, there are only four spin positions in the Aether that primary angular momentum can occupy in forward time direction. Only two of these spin positions allow for the existence of stable matter. The masses associated with these two spin positions appear to have a specific ratio, which may or may not be the onta gap number. The rotating magnetic field of the Aether maintains the primary angular momentum, thus offering us the appearance of a stable, physical Universe.

General Structure

Primary angular momentum already describes as a circle of mass moving at a velocity, thus scanning an area. As this primary angular momentum spins through the Aether unit, the conductance of the Aether produces strong charge. In addition, as the primary angular momentum spins through the Aether it picks up elementary charge. These three characteristics, primary angular momentum, strong charge, and elementary charge, make up the structure of the onn.

The ratio of the spherical elementary charge to the equivalent spherical strong charge produces the fine structure of the onn. The fine structure times 8π is the point of balance where the elementary charge and strong charge interact with each other. This interaction, also known as the "weak force" of the electron, appears in the atomic spectra of isotopes. For atomic nuclei, the weak interaction determines the length of time a proton can keep its bound electron before a neutron decays.

The Electron

Brief History

The name electron was first used for a unit of negative electricity by the English physicist G. J. Stoney in the late 19th cent. The actual discovery of the particle, however, was made in 1897 by J. J. Thomson, who showed that cathode rays are composed of electrons and who measured the ratio

of charge to mass for the electron. In 1909, R. A. Millikan measured the charge of the electron[109].

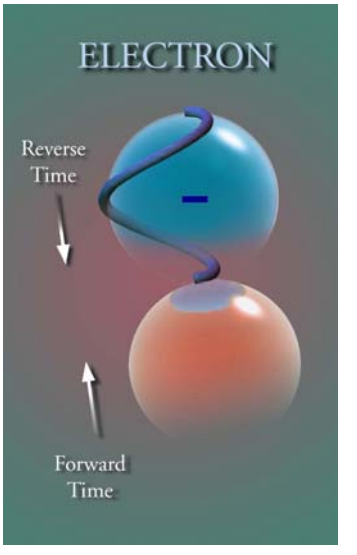
History credits J.J. Thomson with the discovery of the electron. Other researchers such as Nikola Tesla made similar observations. Tesla quotes in the New York Herald Tribune, September 22, 1929 pp. 1, 29:

[109] "Electron ," The Columbia Encyclopedia , 6th ed.

> "Up to 1896, however, I did not succeed in obtaining a positive experimental proof of the existence of such a medium [Aether]. But in that year I brought out a new form of vacuum tube capable of being charged to any desired potential, and operated it with effective pressures of about 4,000,000 volts. I produced cathodic and other rays of transcending intensity. The effects, according to my view, were due to minute particles of matter carrying enormous electrical charges, which, for want of a better name, I designated as matter not further decomposable. Subsequently those particles were called electrons."

The electron has a very specific, unvarying mass equal to $9.109\times10^{-31}kg$. The mass is inseparable from the electron's angular momentum. That is, one cannot dissect the electron and set aside its mass dimension apart from its length or frequency dimensions. Nor is it possible to remove the length dimension from a ruler, the mass dimension from your body, or the charge dimension from lightning.

In modern physics, we perceive electrons in several unnatural ways. We represent them in terms of mass only, electrostatic charge only, or energy. However, as explained earlier, mass is not a thing. Mass is a dimension, while energy is a unit of work.



To view the electron correctly, we must see it for what it is. The electron is primary angular momentum. The Aether determines the mass, length, and frequency dimensions of the electron. Altogether, the electron is a frequency, a surface area, a mass, and two types of charge, all rolled into one. When we analyze the effect of Aether condunctance, the primary angular momentum is equal to strong charge and elementary charge results from the electron's passage through the Aether.

In the electron image to the right, the blue tubular loxodrome represents the spin position of the electron. The angular momentum of the electron spins in this spin position of Aether in the direction of forward time. The surface area of the blue loxodrome represents the strong charge of the electron during the interval the angular momentum spins. As the angular momentum spins, the electron also picks up the electrostatic charge of the blue sphere, which is actually distributed frequency. Thus, each onn will have spherical electrostatic charge, cardioidal (or toroidal) electromagnetic charge, and angular momentum.

The concept that physical particles forever divide is an error in human perception. Atoms comprise the smallest order of solid particles, because only at that level are there three dimensions of length *within* the particle.

However, the angular momentum continues to impart to atoms a quasi particle or cloud-like state, which has confused scientists and resulted in the wave/particle duality conclusions. Reductionism is not a process of cutting things in half, but of reducing the complexity of a system to its simpler components however those simpler components may manifest.

The redundancy in the above description of the electron is intentional, as the nature of primary angular momentum is a new concept for most people. It takes time and reflection to understand what primary angular momentum is and how it represents the primary state of matter. Only then can we transcend the nonsensical popular notion that the particles can exist in two places at once.[110]

The classical electron radius designates by NIST to be[111]:

$$r_e = \alpha^2 a_0 \tag{8.2}$$

$$r_e = 2.817\ 940\ 325 \text{ x } 10^{-15} \text{ m} \tag{8.3}$$

And the Bohr radius designates by NIST to be[112]:

$$a_0 = \frac{4\pi\varepsilon_0\hbar^2}{m_e e^2} \tag{8.4}$$

$$a_0 = 0.529\ 177\ 2108 \text{ x } 10^{-10} \text{ m} \tag{8.5}$$

As shown in the Aether Physics Model, the shape of the onn is toroidal in nature. The formula for a toroid surface area is equal to the small radius times 2π, times the large radius times 2π. Since the Aether Physics Model posits the toroid surface area of the electron, based on the Compton wavelength squared in Planck's constant,

$$h = m_e \lambda_C{}^2 F_q \tag{8.6}$$

we can set up an identity with regard to the electron radii and the surface area of the electron:

Equation (8.2) for the classical electron radius can express in terms of quantum measurements as:

[110] A Dial-Up Quantum Reality (in Research News) David Kestenbaum, *Science*, New Series, Vol. 279, No. 5356. (Mar. 6, 1998), p. 1457.

[111] The NIST Reference on Constants, Units, and Uncertainty http://physics.nist.gov/cgi-bin/cuu/Value?eqre|search_for=radius

[112] The NIST Reference on Constants, Units, and Uncertainty http://physics.nist.gov/cgi-bin/cuu/Value?eqbohrrada0|search_for=radius

$$r_e = \frac{\lambda_C \alpha}{2\pi} \tag{8.7}$$

Equation (8.4) for the Bohr radius can express in terms of quantum measurements as:

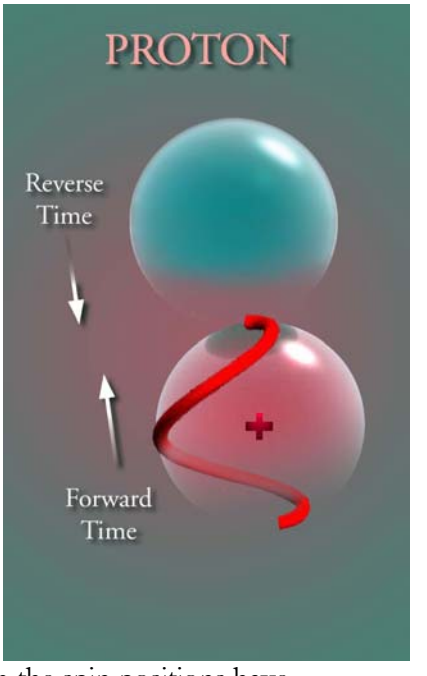
$$\alpha_0 = \frac{\lambda_C}{2\pi\alpha} \tag{8.8}$$

Application of these two radii for the surface area of a toroid, which must equal the Compton wavelength squared, gives:

$$2\pi\left(\frac{\lambda_C \alpha}{2\pi}\right)2\pi\left(\frac{\lambda_C}{2\pi\alpha}\right) = {\lambda_C}^2 \tag{8.9}$$

So it appears that both the classical electron radius *and* the Bohr radius apply to the electron. The results of these observations should be beneficial to Quantum Physics.

Since the above analysis indicates that the electron is toroidal in nature, which also supports the Aether Physics Model, we must examine experiments that measure one or the other radius in order to see why they measure either the small radius or large radius. .



David McCutcheon inspired the concept of the classical electron radius and Bohr radius as the two radii of the electron toroid through his independent research, and resulting Ultrawave Theory[113].

The Proton

Although the double loxodromes appear equal in the diagrams, this is only an artifact of the graphics. In reality, the electron spin position and proton spin position are not equal. Although the spin positions have the same length and frequency dimensions, they have different mass and strong charge dimensions. Also, the length dimensions of the two spin positions are only equal in their products. Both equal quantum length squared.

Let us assume that the electron and proton share the same structure. It should then be possible to model the proton in a similar manner. In the Aether Physics Model, the mechanics of the proton are identical to those of the electron, except that the mass is about 1836 times greater. In addition, the proton spins in forward time in the opposite direction as the

[113] Web page archived at: http://web.archive.org/web/20040923070747/http:/davidmac_no1.tripod.com/.

electron. The spin position is in the positive charge sphere of the Aether and so the proton picks up positive elementary charge. It is because of these opposite spin directions that the electron and proton end up with the same spin direction when Aether units fold over to bind as a neutron.

The Standard Model presents a rather curious and counter-intuitive model of the proton. In general, it does not recognize the radius of the proton, rather, the proton and neutron presents as two manifestations of the same particle, a nucleon[114].

Let us assume that the proton and neutron structure similarly to the electron. We can then assume that the derived fine structures for the proton and neutron are correct, because the same symmetry would apply.

Using the fine structure of the proton derived on page 170, the proton small radius would be:

$$r_p = \frac{\lambda_C p}{2\pi} \tag{8.10}$$

$$r_p = 1.535 \times 10^{-18} m \tag{8.11}$$

and the large radius would be:

$$r_{p0} = \frac{\lambda_C}{p 2\pi} \tag{8.12}$$

$$r_{p0} = 9.717 \times 10^{-8} m \tag{8.13}$$

The radii expressed in terms of quantum length would be:

$$r_p = 6.325 \times 10^{-7} \lambda_C \tag{8.14}$$

$$r_{p0} = 4.005 \times 10^{4} \lambda_C \tag{8.15}$$

These radii may only apply only to free protons, if at all. They are theoretical values at this time since we have found no official published radii for the proton and neutron.

As can be seen from the proportion of the small radius to the large radius, if the above values are correct, the toroid of the proton is extremely thin, with a rather large circumference.

We know that the proton and neutron change shape, depending on the isotope to which the nuclei belong. Scientists at Jefferson Labs have confirmed the various shapes of the proton, even though they attempt to explain these shapes through quark theory.

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[114] "…the proton and the neutron are different states of the same elementary particle, the nucleon." Walter C. Michels, International Dictionary of Physics and Electronics (New Jersey: Van Nostrand, 1956) 726.

Depending on the angular momentum of the quarks, the proton could be spherical in shape or more like a doughnut, a pretzel or a peanut. Miller says the variety of shapes is nearly limitless, and depends on the momentum of the quarks and the angle between the spin of the quark and the spin of the proton[115].

The Neutron

As with the proton, the Standard Model considers the neutron to be a nucleon. Similarly, the Standard Model does not attribute a specific radius to the neutron.

In order for the Aether Physics Model to prove correct with regard to nucleon radii, there must be nuclear data to support the theory. Perhaps such data does exist but was shelved because it was considered "anomalous"? The fact that the Standard Model does not publish a radius for either the proton or neutron does leave open the possibility that the Aether Physics Model is correct.

The reader will keep in mind that the neutron radii are speculation at this time as there is no empirical data from which to draw. It could be that the electron and proton angular momentum actually flow together like two drops of water until beta decay occurs. Alternatively, it could be that the electron is inside the proton and the anti-neutrino is captured dark matter in the space between. The research necessary to determine the exact behavior of angular momentum in a neutron is a task for professional labs.

In the Aether Physics Model, the neutron is a composite of a proton and an electron. While the neutron remains intact, it behaves like a quantum onn. The neutron can remain as a free onn for about 17 minutes[116] before decaying back into a proton and electron.

As depicted in the image on the opposite page, the neutron involves two separate Aether units, folded over onto each other. In one Aether unit, an electron occupies the electron spin position and in the other unit, a proton occupies the proton spin position.

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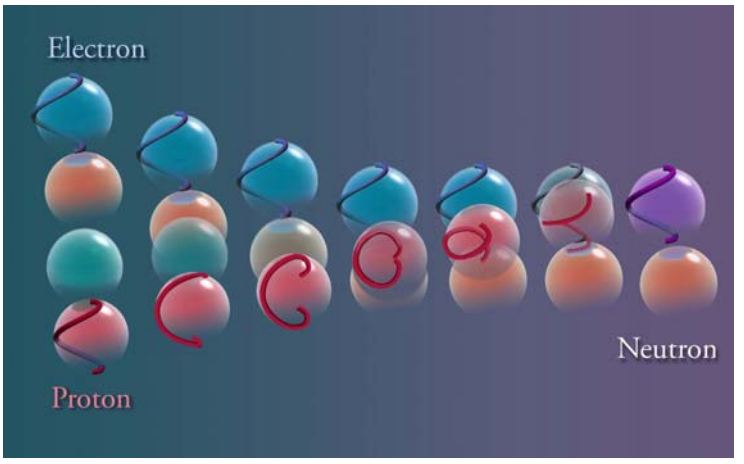
[115] Zooming in on a proton packed with surprises, 2003 JLab News Release http://www.jlab.org/div_dept/dir_off/public_affairs/news_releases/2003/03protonshape.html

[116] "In a nucleus the neutron can be stable, but a free neutron decays with a half - life of about 17 min (1,013 sec), into a proton, an electron, and an antineutrino." "Neutron ," The Columbia Encyclopedia , 6th ed.



The positive sphere of the proton attracts to the negative sphere of the electron. And since the electron and proton spin in opposite directions, when the Aether units fold over, the two onta have the same spin direction and can produce a neutron. Because the forward and reverse directions of frequency determine spin, it is independent of the onn angular momentum. The net spin of the two onta sharing folded space remains ½ while the folded Aether unit causes space-resonance to condense up to a factor of two, another effect of the neutron.

Also, note that the bound electron-proton produces what appears to be a normal Aether unit with no onta in the remaining sphere. This is why the neutron can behave like an electron or proton and bind with other neutrons.

The angular momentum of the neutron is the sum of that of the electron and proton, plus an extra amount that named the "anti-neutrino" by the Standard Model. In addition, the electron has a wobble that is slightly different from the proton, caused by the difference between the masses and the different spin positions the proton and electron take in the Aether.

We can assume that the free neutron small radius is:

$$r_n = \frac{\lambda_C n}{2\pi} \tag{8.16}$$

and the free neutron large radius is:

$$r_{n0} = \frac{\lambda_C}{n2\pi} \tag{8.17}$$

In terms of the measurements of meters and quantum length, the neutron radii express as:

$$r_n = 1.533 \times 10^{-18} m \tag{8.18}$$

$$r_{n0} = 9.717 \times 10^{-8} m \tag{8.19}$$

$$r_n = 6.317 \times 10^{-7} \lambda_C \tag{8.20}$$

$$r_{n0} = 4.005 \times 10^{4} \lambda_C \tag{8.21}$$

We will note that the APM predicts the proton and neutron small radii are much smaller than the electron small radius, while the large radii of the proton and neutron are vastly larger. We predict that these radii apply only to a free proton and a free neutron.

When protons bind with protons and neutrons bind with neutrons in a nucleus, the strong force could cause the large radius to shrink and the small radius to grow, to the point that bound protons and neutrons would appear as spherical.

Proton-Neutron Angular Momenta

Surprisingly, angular momentum of the proton and neutron are subatomic characteristics ignored by the Standard Model.

According to the Aether Physics Model, angular momentum is equal to the mass of the subatomic onn, times the quantum length, times the quantum velocity (speed of light). Thus, the angular momenta of the proton and neutron are easily calculated.

$$h_p = m_p \cdot \lambda_C \cdot c \tag{8.22}$$

where h_p is equal to the angular momentum of the proton, m_p is the mass of the proton, c is the speed of light and λ_C is the Compton wavelength. Similarly, the angular momentum of the neutron is:

$$h_n = m_n \cdot \lambda_C \cdot c \tag{8.23}$$

where h_n denotes the angular momentum of the neutron and m_n is the mass of the neutron. The values of these angular momenta are:

$$h_p = 1.217 \times 10^{-30} \frac{kg \cdot m^2}{\text{sec}} \tag{8.24}$$

$$h_n = 1.218 \times 10^{-30} \frac{kg \cdot m^2}{\text{sec}} \tag{8.25}$$

The Neutrino

When the proton captures an electron, the Aether captures extra angular momentum between the electron and proton. This extra angular momentum likely comes from primary angular momentum existing between Aether units in the form of dark matter. The extra angular momentum induces from the conservation of the known angular

momentum[117]:

$$h_n = h_p + h + h_{\_o} \tag{8.26}$$

where h_n is the angular momentum of the neutron, h_p is the angular momentum of the proton, h is the angular momentum of the electron (Planck's constant) and $h_{\_o}$ is the angular momentum of the anti-neutrino.

The anti-neutrino and neutrino have too much angular momentum to fit in an Aether unit. Therefore, the trapped angular momentum must confine between folded Aether units containing an electron and proton. Since the anti-neutrino angular momentum is much closer in value to that of the electron, the electron coupling to the anti-neutrino must be almost entirely responsible for keeping the anti-neutrino angular momentum spinning. (Since spin is a property that Aether imparts to onta, the anti-neutrino must couple to the electron in order to maintain its spin while trapped in a neutron).

The cavity that the anti-neutrino confines to is electromagnetic in nature, due to the strong charge of the electron and proton binding. Therefore, the cavity must follow the spin position and geometry rules of strong charge, which, like all quantum geometry, describes in terms of unit radii. What the Standard Model labels as the "anti-neutrino" we call a "neutrino." It follows that if the proton and electron were bound matter, their spins would produce a neutrino. Further, the bound anti-matter of the positron and anti-proton would produce an anti-neutrino. The notion of matter producing anti-matter neutrinos is illogical.

The geometry of the neutrino must be toroidal $\left(4\pi^2\right)$ if it exists within the Aether structure. Moreover, since the neutrino couples to the electron it exists between half of the electron and proton Aether units minus half-spin$\left(\frac{4\pi^2}{2}-\frac{1}{2}\right)$. In addition, since the neutrino exists between proton and electron strong charge binding, it must have steradian angle. This gives the neutrino angular momentum, in terms of coupled electron angular momentum, as:

$$\frac{1}{4\pi}\left(\frac{4\pi^2}{2}-\frac{1}{2}\right)h = 1.531h \tag{8.27}$$

[117] Because the neutrino itself cannot be detected easily, inasmuch as its interaction with matter is so weak that it will usually pass through any detector untouched, the neutrino helicity is best measured indirectly through measurements of the momenta and angular momenta of all the other particles taking part in the decay. Assuming the conservation of momentum and angular momentum, any missing momentum and angular momentum must be assigned to the neutrino. Robert K. Adair, The Great Design: Particles, Fields, and Creation (New York: Oxford University Press, 1989) 284.

Simplified we get:

$$\frac{4\pi^2 - 1}{8\pi} h = 1.531h \tag{8.28}$$

Equation (8.28) reflects the observed behavior of the neutrino when it releases during beta decay. Because the beta decay is due to the "weak interaction," the neutrino can violate conservation of parity. What this means is that spin from electrostatic binding is due to two onta mirroring each other, as is also the case with spin from strong charge binding. However, the spin due to the neutrino in a decay process involves only one onn (the neutrino) and therefore there is only one spin parity. 8π is the weak interaction constant.

A neutron is a proton with bound electron and captured neutrino angular momentum. As long as the neutron remains part of a nucleus through strong charge binding, the neutron will not normally decay.

Since the neutrino angular momentum does not reside in Aether, and exists in between the Aether units of the Aether fabric, the neutrino is vulnerable to displacement by other neutrinos passing through. And since neutrinos do not exist within the Aether fabric, and therefore do not have strong charge or electrostatic charge, they can easily pass through dense planets and stars. Thus, there should be an increase in nuclear beta decay during geomagnetic storms, since proton plasma striking the Earth's upper atmosphere generates an increase of muon neutrinos.

Neutrons occasionally release from a nucleus and usually decay in about 11 to 17 minutes, but there is no law governing the half-life of a neutron and a particular neutron may decay at any given time. The process for decay may result from a collision with another neutrino, or from an electron's magnetic moment reaching beyond the binding range of its strong charge attraction to the proton.

In addition to decay from natural collisions, it may be possible to bombard a neutron with neutrinos and initiate beta decay within an atomic nucleus[118]. Of course, certain isotopes will be less stable than others. When the electron escapes from the neutron, the neutrino angular momentum also escapes, thus providing another opportunity to initiate beta decay.

Further Neutrino Insights

No experiment has ever conclusively detected a neutrino or anti-neutrino particle, even though the neutrino should have more angular momentum than an electron.

[118] "an energetic neutrino can induce the reverse of the decay that produced it. " "Neutrino ," The Columbia Encyclopedia , 6th ed.

> Neutrinos possess still another unique characteristic: they are very light. We do not know whether they possess any mass at all. It is quite possible that they have none, like photons. Still, many physicists are convinced that they do possess some mass, even if only an infinitesimal amount. In 1979, physicists at the ITEP research institute of the Academy of Sciences at Moscow claimed to have found proof that neutrinos possess a mass of about 20 eV. To date, this
>
> finding has not been corroborated by any other research center, and it most likely will be some time before we will know unequivocally whether or not neutrinos possess mass. But we do know that their mass cannot be very great, at most about 30 eV. At any rate, neutrinos are very light particles, more than ten thousand times lighter than electrons.[119]

It is interesting to note that the neutrino is supposed to have a mass ten thousand times lighter than the electron, but its angular momentum is about 1.531 times larger than the electron. Here is a simple equation you will not see in the scientific literature. Since angular momentum conserves, the angular momentum of the neutron minus the angular momentum of the proton, minus the angular momentum of the electron gives the total remaining angular momentum attributed to the neutrino.

$$h_n - h_p - h = 1.531h \tag{8.29}$$

The angular momentum of the neutrino is about 1.531 times greater than the angular momentum of the electron. According to the Aether Physics Model, if the neutrino were a true onn it would then have a mass equal to 1.531 times greater than the mass of the electron.

$$\frac{1.531h}{\lambda_C{}^2 F_q} = 1.531m_e \tag{8.30}$$

And, in fact, if the masses of the proton and electron are subtracted from the mass of the neutron we get the same result:

$$m_n - m_p - m_e = 1.531m_e \tag{8.31}$$

If the neutrino is said to have a mass ten thousand times lighter than the electron, then the Standard Model interpretation of neutrinos must be wrong. Alternatively, if the Standard Model were correct, where is the missing mass[120]? Relativity theory might claim that the mass converts into energy. But remember, energy is not a thing and mass is merely a

[119] Harald Fritzsch, The Creation of Matter: The Universe from Beginning to End, trans. Jean Steinberg (New York: Basic Books, 1984) 122.

[120] To add a disconcerting touch to the mystery of beta decay, it was found that microcalorimetric measurements of the heat given up by the disintegration of RaE showed that the effective energy in heating is the mean energy of the beta particles. Thus it appeared that an energy of E_{max} was given up at each disintegration, but only a variable fraction of this energy was ever measured; the rest of the energy mysteriously vanished. Lapp and Andrews Nuclear Radiation Physics (New York, Prentice-Hall, Inc. 1948) 172

dimension. In addition, energy is time dependent and finite. If mass were converted to energy in a subatomic particle, then the energy can only exist for so long before it is expended. Mass cannot be converted into energy for 1 million years in one instance and the same mass only exist as energy for 17 minutes in another instance. For the interpretation to be correct, the missing mass must explain in terms of angular momentum.

In the Aether Physics Model, the primary angular momentum of onta must spin in one of four Aether spin positions. With the proper amount of onn angular momentum present, the Aether will maintain that onn's angular momentum as it spins in the Aether unit since the Aether unit is a rotating magnetic field. On the other hand, if the angular momentum spinning in the Aether does not properly fill the Aether spin position, then there is no coupling between the onn and the Aether unit.

What does the evidence suggest is happening to the neutrino angular momentum? Quoting from American Scientist[121]:

> All we know is that muon neutrinos from below [arriving from the opposite side of the Earth], which have traversed the longest distance, are disappearing. Could the muon neutrinos be turning into electron neutrinos? If they were, we would see an excess of electron neutrinos coming from below, commensurate with the deficit of muon neutrinos. This is not the case: The electron neutrinos coming from below and from above match the no-oscillation prediction. In addition, an independent experiment that measures electron flavor antineutrinos coming from a nuclear reactor, the Chooz experiment in France, has ruled out the possibility of electron-to-muon-neutrino oscillation for similar parameters, by virtue of the fact that they do not see electron neutrinos disappear.

The article refers to the data from the Super-Kamiokande experiment, where scientists monitored neutrons from atmospheric decays from inside a giant tank of ultra pure water, deep underground. The data clearly indicated that neutrinos from muon decays were not arriving at the sensors at the expected rates.

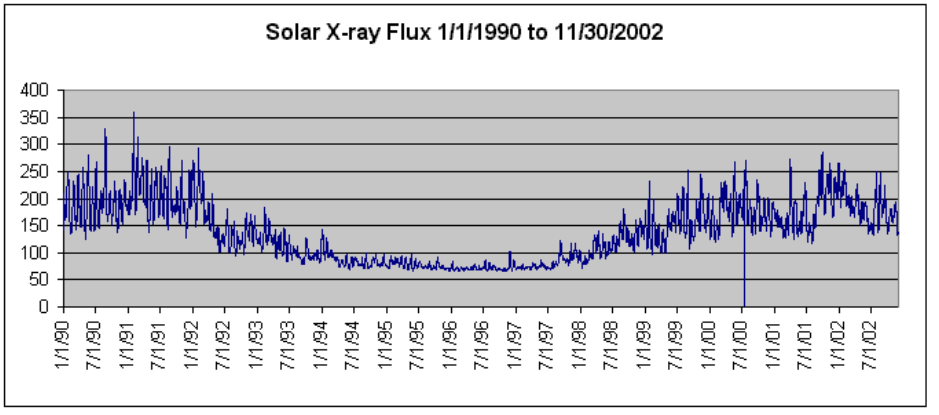
The missing neutrinos were lost while passing through the Earth. We can speculate here that these neutrinos interacted with radioactive elements within the Earth and thus caused an increase in radioactive decay in the mantle. The increased radioactive decay would cause an increase in magmatic heat, which in turn would cause an increase in volcanic and seismic activity in certain regions within the Earth.

---

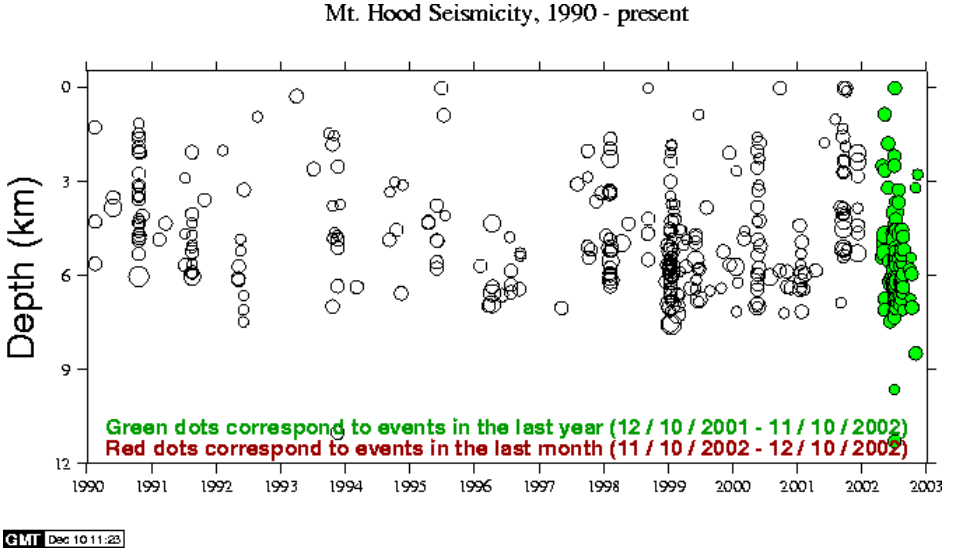
[121] Kenji Kaneyuki and Kate Scholberg, "Neutrino Oscillations," American Scientist May-June 1999: 222, Questia, 1 July 2004 <http://www.questia.com/>.

Before presenting the evidence to support this hypothesis, we should point out that muon neutrinos form when positively charged protons strike the Earth's upper atmosphere. The positively charged protons come from solar plasma released by the Sun during a coronal mass ejection (CME).

If the above hypothesis is correct, then when solar data compares to the proper seismic data, a correlation between solar activity and seismic activity should be apparent.



The above graph shows the daily average solar X-ray flux from Jan 1, 1990 to Jul 31, 2002.



The preceding chart shows the seismic time-depth plot for Mt Hood[122] during the same period as the solar X-ray flux graph. Notice the correlation between the solar X-ray flux activity and the volcanic earthquake activity. Naturally, there are several factors involved in volcanism and it is necessary to account for these factors when analyzing the data. It could be coincidence that over a 12-year period the solar

[122] http://www.ess.washington.edu/SEIS/PNSN/HOOD/hoodfigs.html

activity and seismic activity of the volcano were in accord. However, the fact that the data occur leaves open the possibility that the two correlate. These observations require more research.

The mass of the neutrino sandwiched between Aether units remains as angular momentum. If it is possible for the neutrino angular momentum to move about without interacting with Aether units, then regardless of what form the neutrino angular momentum takes, it will not be able to pick up electrostatic charge from the Aether, nor will the conductance of the Aether generate strong charge for the neutrino.

If the neutrino mass is 1.531 times the mass of the electron, and this mass does not readily interact with visible matter, it could still retain its mass and manifest as dark matter. And where would this dark matter tend to accumulate? Most dark matter would be near large groups of stars, that is, galaxies, which are in fact the primary hubs of neutrino activity.

If a neutrino is trapped angular momentum due to folded Aether units, any process that emits neutrinos must be a process involving folded Aether units. Scientific studies disclose that neutrinos result from the decay of muons. Therefore, muons must be transient-compound-bound onta of some form.

In the case of pions, a neutrino by-product may be merely a catchall term for missing angular momentum in a supposed equation. Since the strong force can be shown to be an electromagnetic force based on the strong charge of an onn, such particles as pions obviously would not exist.

It appears that there is a huge sea of angular momentum coexisting with Aether units in some kind of primary "space-time." The angular momentum that draws into the Aether via the Casimir effect becomes photons, which can become electrons via the photoelectric effect.

The Photon

In the Standard Model, the photon is a discrete parcel of energy.

Photon – Standard Model Definition

> The quantum of electromagnetic energy, regarded as a discrete particle having zero mass, no electric charge, and an indefinitely long lifetime.[123]

The Standard Model does not describe the photon as an actual entity, but as the quantum of energy a supposed photon would contain. In other words, the photon remains undefined even when acknowledged as possessing energy. If the definition states that the photon is a discrete

[123] The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

particle, the particle must have some kind of physical property. Yet the mass is zero. What kind of particle has zero mass even though mass is supposed to be one of its dimensions (as evidenced by the unit of energy)?

Look at it this way. Energy defines as a unit of work, which is equal to the dimension of mass times the velocity squared:

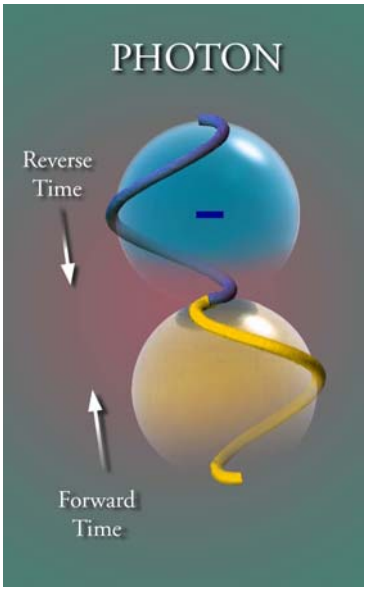
$$joule = kg \cdot \left(\frac{m}{sec} \right)^2 \tag{8.32}$$

If $E = mc^2$ were a real equation that described the energy of a photon, the photon would have energy equal to:

$$\begin{aligned} E &= 0kg \cdot c^2 \\ E &= 0\, joule \end{aligned} \tag{8.33}$$

The photon has zero energy if it has zero mass. At least, that is how we learn to do the math in algebra class. However, our science community tells us the mass converts to energy due to relativistic effects. Somewhere we are supposed to forget what we learned in algebra class and believe that zero mass can still amount to a huge amount of energy. In other words, the photon is pure energy, which is supposed to explain why it has zero mass. The math does not support that claim, but nonetheless it is the scientific explanation.

Therefore, there is a paradox. Energy is equal to mass times velocity squared, but the photon energy does not equal zero. We normally call such theories, "mistakes." However, modern physics calls it Special Relativity Theory. Perhaps that is why the word "special" is in the name of the theory? We allow this theory to break the rules of mathematics and defy common sense, while other theories must hold to exact specifications.



If energy is just a unit of work, what did the mass become? Apparently, nobody knows because the definition of the photon relates to the amount of energy it possesses, not to the quantification of the photon itself. Therefore, what we really have is the question of whether or not Einstein truly quantified the photon.

As mentioned (page 120), in the Aether Physics Model the photon is an expanding electron. The angular momentum of the photon must conserve, and so it takes the form of an expanding double cardioid with a decreasing small radius. At extreme

distances, the photon is merely a line with an incredibly short, small-radius.

According to the Aether Physics Model, it would appear that the photon seems to have zero mass because half of its angular momentum is in the electron spin position and the other half is in the positron spin position. Just as a particle and anti-particle annihilate, it could be that half-filled spin positions would neutralize their oppositely spinning inertias rather than annihilating each other. However, if an atom absorbs the angular momentum of the photon and merely fills an electron spin position, then once again the mass and charge would be available for physical interaction.

Another way to look at this is with the cup and water analogy. The Aether has four cups. There are two different sizes, of which the electron and positron are the same. Of these, one is spinning left the other is spinning right. The angular momentum flows easily between these two cups and thus the photon can easily convert to an electron or positron, either of which can convert back to a photon.

As the photon expands, its encapsulating Aether unit also expands. The equal distribution of angular momentum in the two halves of the Aether unit keeps it intact even with infinite stretching. And since the Aether unit is quantum and dynamic, the Aether maintains the angular momentum even for billions of light years, no matter how stretched the angular momentum becomes.

Rarely does nature send out just one photon, however. According to the Aether Physics Model, atomic structure determines frequency by the rate photon production. In order to increase the intensity of the photon stream (light), one would increase the number of excited atoms. To achieve maximum light intensity for a given substance, one would excite 100% of the atoms of that substance.

In the Standard Model, the increase of light intensity explains as the increase of input energy. When the energy input to a substance is increased, the energy output naturally increases. However, this reveals nothing about the processes occurring within the atom. From an engineering perspective, the Standard Model is less effective than the Aether Physics Model, which reveals product design options.

Depending on whether there is a valence electron in an atom, certain atoms absorb photons, whilst others reflect. By the time a given photon reaches a target atom, the angular momentum of the photon and its associated Aether unit has stretched, and only a portion of the original photon angular momentum is absorbed. The greater the distance between the source atom and the target atom, the less angular momentum will be absorbed at the target atom.

For a given target atom, angular momentum arrives from all directions at varying rates. The portion of angular momentum that arrives at the atom decelerates and then stores within the atom in a shell position with no onta. This shell position is receiving both portions of angular momentum and portions of Aether units. Depending upon the atomic structure, there may be several scenarios as to what happens next.

1. The received angular momentum and Aether unit portion can be accumulated to form an electron, or

2. the received angular momentum and Aether unit portion can be accumulated to form a positron, or

3. the received angular momentum and Aether unit portion can be accumulated as a combination electron and positron at twice the size of a normal Aether unit.

As the quantity of accumulated angular momentum increases, it eventually reaches a point where there is a full Aether unit and its electron and/or positron spin position fills with angular momentum.

If the valence electron built up as an electron/positron pair, then it has a net zero electrostatic charge and electromagnetic charge, and ejects from its present location in the electron shell to a position further out. Depending on its momentum, the valence electron travels in steps of one quantum length in one quantum frequency (speed of light), where it will shed half the angular momentum as a 1-spin photon, or will completely dissociate from the atom and split into an electron-positron pair.

When a photon materializes, the angular momentum of the electron radiates at the speed of light and the photon is equal to:

$$phtn = h \cdot c \tag{8.34}$$

Graviton

According to modern physics, the graviton is the quantum of the gravitational field[124]. The language is different from the Aether Physics Model, but the graviton does resemble the Aether unit. Both the Aether unit and the graviton have a spin of 2 and zero physical mass.

Nevertheless, unlike the Standard Model, the Aether unit is not only the quantum of the gravitational field; it is the quantum of all the fields. In fact, in the Aether Physics Model, the Aether unit is the only quantum that can produce a field of any kind since it also is the source of space-resonance.

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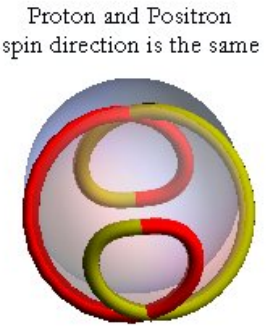
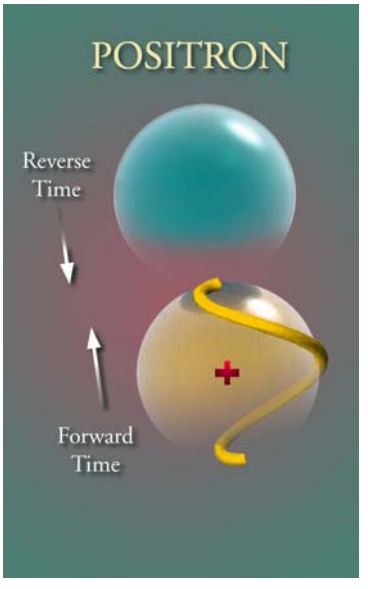
[124] "…the quanta of the gravitational field, which we name the graviton, must have a spin of 2." Robert K. Adair, The Great Design: Particles, Fields, and Creation (New York: Oxford University Press, 1989) 217.

Positron

The positron has the same mass as the electron and the same electrostatic charge as the proton. Therefore it exists in the opposite spin direction to the electron and the same spin direction as the proton, on the positive sphere of the Aether unit.



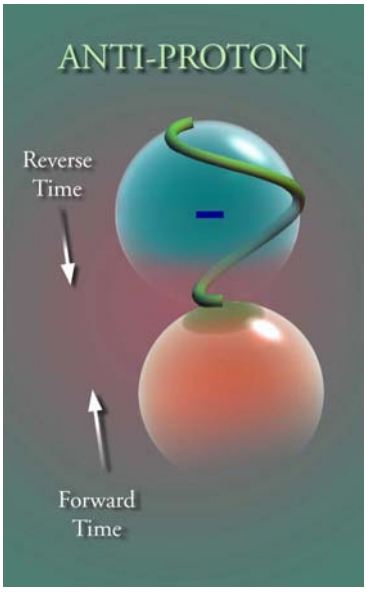
It may seem counter-intuitive at first to visualize the proton and positron as having the same spin direction. However, when we look at the Aether unit from the bottom, it is easier to see.



Anti-Proton

The anti-proton onn has the same electrostatic charge and spin direction as the electron and thus the opposite spin direction as the proton. As the electron and proton can bind and thus cause their spin directions to be the same, the positron and anti-proton can do the same and produce an anti-neutron.

In addition, similar to the gravitational repulsion of the positron and electron, the anti-proton and proton would also gravitationally repel each other. It could very well be that many of the far away galaxies are actually anti-galaxies.



Furthermore, since the electron works with the positron to produce photons in the proton-based portion of the Universe, we can assume that positrons work with electrons to produce photons in the anti-proton-based portion of the Universe. Thus, we should be able to see anti-galaxies if they are not too far distant, as the photons of matter and anti-matter are the same. Theoretically, we should be able to receive signals from civilizations made of anti-matter via radio transmissions.

Exotic Collision Effects

The Aether Physics Model is a true quantum model in that it explains the structure of *stable* onta that make up the physical Universe. So-called "particles" that last for less than a minute are not the primary building

blocks of a stable Universe; they are the temporary effects of collisions. In the Aether Physics Model, the focus is on establishing a structural model for the stable forms of existence that make up the vast portion of the visible Universe.

When sufficient resources and access to data has been obtained, there can be further research into muons, tau particles, and other collision effects within the paradigm of the Aether Physics Model.

Chapter 9

UNIFIED FORCE THEORY

Simple and Symmetrical

For over 100 years, physicists have been searching for a Unified Force Theory in order to unify what the Standard Model calls the electromagnetic, weak nuclear, and strong nuclear forces. Because the Standard Model prefers to view the interaction of the forces in terms of "fields," it is often called the "unified field theory." Even more important is the Theory of Everything, which not only unifies the three named forces, but also includes the gravitational force. Still others consider a Theory of Everything one that literally ties together all known phenomena.

The Aether Physics Model reinterprets the nature of the three electrical forces and labels them the electrostatic force, proportion of electric force (or weak interaction), and electromagnetic (strong) force, respectively. In addition, the Aether Physics Model provides a mathematically correct Theory of Everything that unifies all four forces.

In order to understand the nature of the forces, it is necessary to understand the structures that manifest the forces. The Aether Physics Model sees all stable quantum matter (onta) as primary angular momentum encapsulated by Aether.

There are two types of charges, the electrostatic charge, and the strong charge. The electrostatic charge has a spherical solid angle, which it inherits from the spherical distributed frequency dimensions of Aether. The strong charge has steradian solid angle, which derives from the interaction of primary angular momentum with the conductance of the Aether.

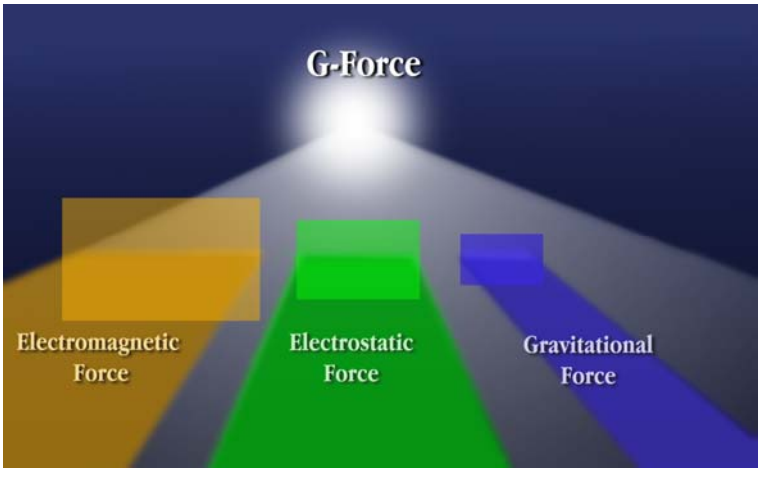
Understanding how distributed charge angles are independent of distributed length geometry is essential to understanding the two types of charges. While the distributed charge relationship between charge solid angle of 1

and charge steradian solid angle $\left(\frac{1}{4\pi}\right)$ is 4π, the surface area relationship between the sphere surface constant (4π) and toroid surface constant $(4\pi^2)$ is $\frac{1}{\pi}$. The two geometries do not have a direct relationship to each other, as one applies to solid angle charges and the other to distributed length (surface area).

Further, a toroid can become spherical in nature when its small radius becomes very large and its large radius becomes very small. In such cases, even though the surface geometry is still that of a toroid, the steradian strong charge will behave as though it has spherical solid angle.

The spherical electrostatic charge and the toroidal strong charge have a precise proportion, which is the "weak interaction," or "charge ratio," of the onn. Technically, the weak interaction is not an actual force and so there are only three fundamental forces.

The electrostatic charge is the "carrier" of the electrostatic force and the strong charge is the "carrier" of the electromagnetic or strong force. The strong charge is also directly proportional to the mass of the onn (via its angular momentum) and provides the link between the gravitational force and strong force. In the end, all three forces are actually manifestations of the one Gforce. The charges and mass could depict as three colored glass panes through which we view a light. The same light illuminates each pane of glass, even though each pane is a different color.



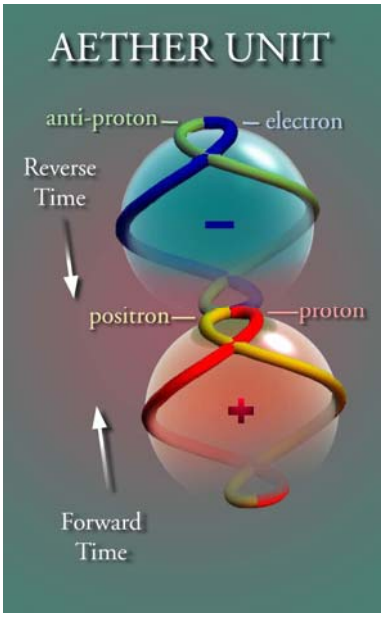
There are no gluons, quarks, flavors, colors, or other imaginary particles invoked to unify the forces. The entire Unified Force Theory has a Newtonian mathematical foundation and the calculated relative strengths of the forces precisely verify through numerous experiments.

Elementary Charge

The physical elementary charge activates directly from the Aether electrostatic charge as the onn spins in it. The elementary charge squared has spherical geometry and arises from distributed frequency (resonance of time and spin parity direction), which is in turn caused by the reciprocal mass of the Gforce.

In the image at right, the Aether depicts as having two spheres, which arise as the oscillation of forward/backward time and right/left spin direction. Only one onn can exist in any given Aether unit at a given moment. In addition, each onn must take a very specific spin position, depending on its mass and direction of spin.

As an onn spins in its particular Aether spin position, the angular momentum activates the electrostatic charge. For example, electron angular momentum occupies the blue spin position and thus picks up a negative electrostatic charge (elementary charge squared). A positron would take the yellow spin position and pick up positive electrostatic charge. All onta spin only in the forward direction of time.



In the Standard Model of physics, charge expresses with a single dimension. However, since all charge always appears as distributed[85], the Aether Physics Model expresses all charge in distributed dimensions. The elementary charge has been measured and has a value of $1.602\times10^{-19} coul$. The symbol for elementary charge is e.

Elementary charge in the Aether Physics Model expresses as e^2 and we name it "electrostatic charge". Thus the value for electrostatic charge in the Aether Physics Model is:

$$e^2 = 2.567\times10^{-38} coul^2$$

In cgs units, e^2 is equal to:

$$e^2 = 2.307\times10^{-19}\ \frac{gm\cdot cm^3}{sec^2}$$

The cm^3/sec^2 dimensions are similar to the Aether double cardioid unit.

Expressing all electrostatic charge as e^2 does not change its relative value. All units involving charge adjust accordingly.

Changing elementary charge to distributed units is not an arbitrary decision. First, it reflects reality as observed by Charles Coulomb. Second,

distributed charge implies from Aether geometry (as explained by angular momentum spinning in Aether conductance). And third, expressing all charge as distributed is the key to the Unified Force Theory. It is interesting to note that Charles Coulomb made the correct observation that all charge distributes, even though charge units did not express in distributed dimensions. If he and his peers had expressed charge in distributed dimensions, they would have discovered the Unified Force Theory over 100 years ago.

Strong Charge

Charles Coulomb came very close to discovering the electromagnetic (strong) charge:

> I wished to use the same method to determine the attractive force between two balls charged with a different nature of electricity but by using this same balance to measure the attractive force, I found an experimental difficulty that did not occur when measuring the repulsive force. The experimental difficulty arises when the two balls are drawn near to each other. The attractive force which increases, as we have clearly seen, according to the inverse square law of distances, frequently increases at a greater rate than the torsional force, which increases only directly as the angle of twist…[125]

Had Coulomb considered that there are two different types of charge, he would have noticed that the second charge is electromagnetic in nature (as opposed to the electrostatic charge). In addition, he would have been able to express the force law for this other type of charge in terms of a modified inverse square law of distances (as done in the Aether Physics Model).

As it is, modern physics recognizes only one type of charge, and consequently the strong force poorly describes in terms of particles called gluons[126].

Before quantifying strong charge, we note that the conductance of the Aether derives from Coulomb's constant and its relationship to the other known constants of the "vacuum":

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[125] Coulomb, Charles *Augustin Institut de France, Mémoires de l' Académie des Sciences* (1785) 569ff, 578ff [as published in Shamos, Morris H. Great Experiments in Physics; Firsthand Accounts from Galileo to Einstein (New York, Dover Publications, Inc., 1987) 65]

[126] Gluon, an elementary particle that mediates, or carries, the strong, or nuclear, force. In quantum chromodynamics (QCD), the quantum field theory of strong interactions, the interaction of quarks (to form protons, neutrons, and other elementary particles) is described in terms of gluons—so called because they "glue" the quarks together. Gluons are massless, travel at the speed of light, and possess a property called color. The Columbia Electronic Encyclopedia, Sixth Edition Copyright © 2003

$$Cd = \frac{k_C \cdot \varepsilon_0}{c \cdot \mu_0} \tag{9.1}$$

$$Cd = 2.112 \times 10^{-4} \frac{\sec \cdot coul^2}{kg \cdot m^2} \tag{9.2}$$

Scant literature exists describing the conductance of Aether (vacuum, free space, quantum foam) in modern physics. Conductance is the "measure of a material's ability to conduct electric charge."[127] Electrons do "conduct" through the Aether, as observed when electrons travel in the space between the Sun and Earth. Electrons also pass through Aether in a vacuum tube. The conductance constant is a specific measure of the Aether's ability to conduct strong charge.

Planck's constant is equal to[128]:

$$h = 6.626 \times 10^{-34} \frac{kg \cdot m^2}{\sec} \tag{9.3}$$

Planck's constant generally defines in modern physics as "The constant of proportionality relating the energy of a photon to the frequency of that photon."[129] The Standard Model has missed the fact that Planck's constant is actually the quantification of the electron.

Strong charge then calculates as:

$$h \cdot Cd = e_{emax}{}^2 \tag{9.4}$$

$$e_{emax}{}^2 = 1.400 \times 10^{-37} coul^2 \tag{9.5}$$

where $e_{emax}{}^2$ is the strong charge. The strong charge, like the electrostatic charge, is distributed.

Unlike electrostatic charge, each onn has a strong charge value proportional to its mass. This is because the strong charge is dependent on the angular momentum of the onn, and the Aether length and frequency dimensions are quantum measurements. Strong charge notates as $e_{emax}{}^2$ for the electron, $e_{pmax}{}^2$ for the proton, and $e_{nmax}{}^2$ for the neutron.

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[127] The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

[128] The NIST Reference on Constants, Units, and Uncertainty http://physics.nist.gov/cgi-bin/cuu/Value?h|search_for=planck+constant

[129] The American Heritage® Stedman's Medical Dictionary Copyright © 2002, 2001, 1995 by Houghton Mifflin Company.

"Weak Interaction"

The proportion of electrostatic charge to strong charge is equal to 8π times the fine structure of the onn.

$$\frac{e^2}{e_{emax}{}^2} = 8\pi\alpha \tag{9.6}$$

The significance of this proportion is that it represents the "weak interaction" of the onn. Because each onn has its own strong charge, it will also have its own "weak interaction" constant.

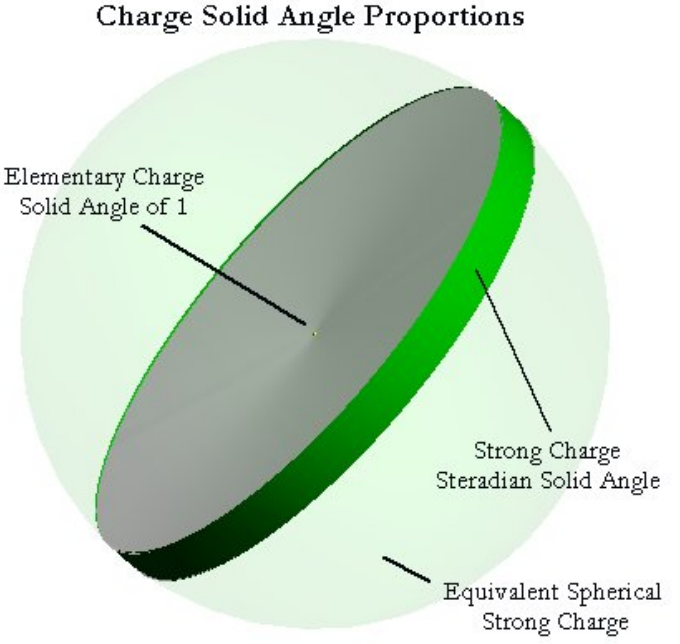
$$\frac{e^2}{e_{pmax}{}^2} = 8\pi p \tag{9.7}$$

$$\frac{e^2}{e_{nmax}{}^2} = 8\pi n \tag{9.8}$$

Equations (9.6) through (9.8) represent the *unified charge equations* for each onn. Taken together these equations are the basis for a mathematically correct Unified Force Theory.

The Aether Physics Model shows that the weak interaction is merely the proportion of the electrostatic force to the strong force. When the relative strengths of distributed charge carriers are analyzed, we find electrostatic charge to be 10,000 times weaker than the electromagnetic charge. However, since the Standard Model views charge in single dimension, it appears as only 100 times weaker.

The unified charge equations dictate a general geometry for the onta.



Charge Proportions

The graphic on the previous page illustrates the two charges of the electron as their solid angles proportionally relate to each other. It is important to keep in mind that the graphic is only for conceptualizing the solid angles; it does not represent the true shape of an electron.

Electrostatic charge has the solid angle of 1 (tiny yellow sphere in center of light green sphere) while the strong charge has the solid angle of a steradian (projected as the dark green band).

From Aether perspective, the actual electron shape would appear as in the blue loxodrome image at right.

The strong charge has a solid angle equal to $\frac{1}{4\pi}$ of the spherical electrostatic charge. What this means is that the distribution of the electrostatic charge is spherical, whereas the distribution of the strong charge is $\frac{1}{4\pi}$ of an equivalent strong charge, 1-spin sphere.

Again, the electrostatic charge has 1-spin due to its relation to the Aether spherical distributed frequency. The strong charge has ½ spin, due to the ½ spin of the angular momentum, so multiplying ½ spin by 2 converts ½ spin to 1-spin. Now multiplying the steradian solid angle of strong charge by 4π converts the steradian solid angle of the strong charge to a solid angle sphere.

To keep track of the geometry of the charge, we could introduce a geometrical symbolism.

Symbols for geometry of charge:

O = *Spherical geometry*

Ω = *½ spin steradian geometry*

Θ = *1-spin steradian geometry*

$$e^2 = O$$

$$e_{emax}{}^2 = \Omega$$

$$e_{emax}{}^2 \cdot 2 = \Theta$$

$$e_{emax}{}^2 \cdot 2 \cdot 4\pi = O$$

The proportion of the electron electrostatic charge sphere to the electron electromagnetic charge sphere is α, the fine structure constant of the electron.

$$\frac{e^2\mathrm{O}}{{e_{emax}}^2\mathrm{O}} = \alpha \tag{9.9}$$

Equation (9.9) is the same as equation (9.10).

$$\frac{e^2\mathrm{O}}{{e_{emax}}^2\Omega \cdot 2 \cdot 4\pi} = \alpha \tag{9.10}$$

Force Laws

There are three recognized forces, the gravitational, electrostatic, and strong force. The weak interaction is not a force at all. The gravitational force is proportional to the strong force by way of the mass to strong charge ratio. The electrostatic force, weak interaction, and strong force all work together. The electrostatic force law works for electrostatic charge at a relatively long distance, but not at a very close distance. Also, the strong force law works for electromagnetic charge at a very close distance, but not at a relatively long distance. The two forces actually trade off, depending on the distance between the charged bodies.

After completing the nuclear binding energy equation, we can predict that it will include elements of both the electrostatic and electromagnetic force laws. It will also likely include the weak interaction as a term.

Electrostatic Force Law

The Coulomb law is the law governing the force between electrostatic charges. Coulomb's experiments with the torsion balance (above photo[130]) involved spherical surfaces and aimed to maximize electrostatic potential. As electrostatic charge applied to the spheres, the force between the spheres would increase. The charged spheres would then attract (if opposite charged) or repel (if like charged) and thus would move a specific distance. Experiment showed that the distance squared was inversely proportional to the amount of the electrostatic charges:

$$k_C \frac{e \cdot e}{L^2} = F \tag{9.11}$$

In equation (9.11), where k_C is Coulomb's electrostatic constant, e represents the electrostatic charge, L is the distance between the charges, and F is the resultant force.

Coulomb noticed that the above law does not hold when the charges become very close to each other. This is because the strong charge begins to take over. The boundary between the electrostatic charge dominance and the electromagnetic charge dominance is gradual. The balance between these two forces results in the weak interaction.

[130] Photo from http://www.wpcmath.com/arts/coulomb.gif

Gravitational Law

Since the gravitational force is experienced by all matter in the universe, from the largest galaxies down to the smallest particles, it is often called universal gravitation. Sir Isaac Newton was the first to fully recognize that the force holding any object to the earth is the same as the force holding the moon, the planets, and other heavenly bodies in their orbits. According to Newton's law of universal gravitation, the force between any two bodies is directly proportional to the product of their masses and inversely proportional to the square of the distance between them. The constant of proportionality in this law is known as the gravitational constant; it is usually represented by the symbol G and has the value $6.672 \times 10^{-11} \frac{m^3}{kg \cdot sec^2}$ in the meter-kilogram-second (mks) system of units. Very accurate early measurements of the value of G were made by Henry Cavendish.[131]

$$G \frac{M_1 \cdot M_2}{L^2} = F \tag{9.12}$$

In equation (9.12), G is the Newton gravitational constant, M_1 and M_2 are two masses, L is the distance between the masses, and F is the force between the masses.

It is not necessary to elaborate further on the gravitational law since information is widely available concerning its nature.

Strong Force Law

The strong force law is unknown to modern physics. According to the Standard Model, the strong force is "In physics, the force that holds particles together in the atomic nucleus and the force that holds quarks together in elementary particles."[132] There is no practical equation for calculating the strong force in the Standard Model because there is no practical strong force carrier.

However, the strong force carrier in the Aether Physics Model is the electromagnetic charge, or strong charge. The strong charge quantifies as the angular momentum of the onn times the conductance of the Aether. Thus, the strong charge of the proton is equal to:

$$e_{pmax}{}^2 = h_p \cdot Cd \tag{9.13}$$

[131] "Gravitation ," The Columbia Encyclopedia , 6th ed.

[132] The New Dictionary of Cultural Literacy, Third Edition Edited by E.D. Hirsch, Jr., Joseph F. Kett, and James Trefil. Copyright © 2002 by Houghton Mifflin Company.

The strong force of the proton calculates using the strong force law, which is similar to that of the electrostatic force law and the gravitational law. As in the case of the electrostatic law, the product of two strong charges calculates from a single dimension of each charge. Since the binding force causes the protons and neutrons to have large "small radii" and small "large radii," the onta appear spherical. Thus, the Coulomb constant instead of the Aether unit constant is the force mediator.

$$k_C \frac{e_{pmax} \cdot e_{pmax}}{L^2} = F \tag{9.14}$$

The strong force of the neutron is similarly calculated:

$$k_C \frac{e_{nmax} \cdot e_{nmax}}{L^2} = F \tag{9.15}$$

The strong force law for free protons and free neutrons would probably integrate the Aether unit constant with the Coulomb constant. This is because free protons and free neutrons are more toroidal in shape. However, once they bind, their shape becomes spherical.

Since the Aether is always acting upon strong charge, whether or not there is another onn present, the strong force per onn is actually the strong force of a single onn. In other words, the Aether is acting on onta to produce force even when there is no other onn around to interact with the force. This must be so since the onta have no proximity system that can sense when another onn is nearby, and then react to it.

The total nuclear binding force is the sum of all force acting upon onta in an atomic nucleus. The total force acting upon a single neutron at one quantum length, even though there are no other neutrons or protons nearby, is:

$$A_u \frac{e_{nmax}^{\ 2}}{\lambda_C^{\ 2}} = 1.839 \times 10^3 \; forc \tag{9.16}$$

The total strong force for an atomic nucleus of deuterium, however, is:

$$k_C \frac{e_{pmax}^{\ 2}}{\lambda_C^{\ 2}} + k_C \frac{e_{nmax}^{\ 2}}{\lambda_C^{\ 2}} = 3675 \; forc = 124 newton \tag{9.17}$$

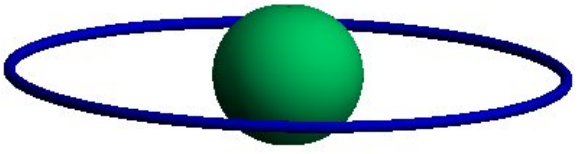
Coulomb's constant appears in equation (9.17) due to the spherical structure of the resulting nucleus. The nuclear strong force equation then expresses as:

$$k_C \frac{Z \cdot e_{pmax}^{\ 2} + N \cdot e_{nmax}^{\ 2}}{\lambda_C^{\ 2}} = F \tag{9.18}$$

where Z is the number of protons and N is the number of neutrons in the nucleus. The nuclear strong force equation quantifies nuclear binding force. We can modify (9.18) to produce a nuclear binding energy equation, which predicts the nuclear binding energy for all isotopes. (page 236)

As shown in the section on particle radii, the free proton has a very small "small radius" and a very large "large radius." Thus, a single hydrogen atom is both very thin and very wide. However, as soon as protons and neutrons bind, the strong charge causes the onta to contract. The large radius becomes much smaller and the small radius becomes much larger. This causes the geometry of the strong charge to change from toroidal to spherical in geometry.

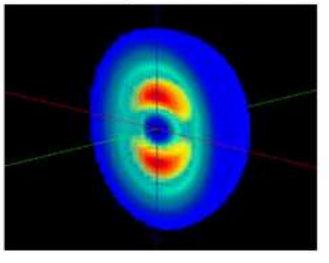
In the "two toroids" graphic, both the blue object and green object are toroids. The green toroid has a small radius that is larger than the large radius.



Two Toroids

The two onta adjoining each other tend to squash into a single sphere as in the graphic of the deuterium atom below.

Intrinsic Shape of the Deuteron



Nuclear Highlights, Jefferson Labs[133]

As long as the total surface area of the onn remains exactly one quantum length squared, the onn can assume any shape without violating conservation of angular momentum, mass, energy or any other perceived conservation law.

When onta are relatively far apart, the Coulomb electrostatic constant mediates the spherical geometry charge. When protons and neutrons are contacting, Coulomb's constant still mediates spherical geometry charge. The change of shape from toroidal to spherical does not appear to occur to bound electrons within atoms, which have a mass of about 1836 times less than a proton or neutron.

[133] Intrinsic Shape of the Deuteron, Jefferson Labs (Nuclear Highlights) http://www.jlab.org/highlights/nuclear/Nuclear.html

Relative Force Strengths

A comparison of the Unified Force Theory calculated force carrier strengths to the empirically derived force carrier strengths of the Standard Model.

The Standard Model attempts to describe force carriers in terms of particles.

> Each force is carried by an elementary particle. The electromagnetic force, for instance, is mediated by the photon, the basic quantum of electromagnetic radiation. The strong force is mediated by the gluon, the weak force by the W and Z particles, and gravity is thought to be mediated by the graviton.[134]

To begin with, the Standard Model photon is not truly quantum. There is a different "sized" photon for each frequency of electromagnetic radiation. In addition, all force carriers in the Standard Model incorrectly express in terms of particles. If force carriers were truly particles, then binding energy would be equal to the force of the force carrier times the distance it travels. This is not the case. The concept of a force being a particle is meaningless.

In the Aether Physics Model, the force carriers are the electrostatic charge, electromagnetic charge, and mass. The so-called "weak force" is really just a proportion of electrostatic charge to electromagnetic charge. The true source of force in the Universe is the Gforce, which acts through Coulomb's electrostatic constant, the strong charge constant (quantum Aether unit), and the Newton gravitational constant.

Here we will determine the relative strengths of Gforce as it acts on electrostatic charge, electromagnetic charge, and mass. But since the Standard Model experiments that determine the relative strengths of the forces are expressed in single dimension charge, we will have to compare the square root of APM charges to the Standard Model charges in order to observe the relative strengths.

We will begin with the electrostatic charge [equation (9.19)], taking it to be equal to 1 elementary charge in the Standard Model. The strong charges will now compare in terms of electrostatic charge. The proton and neutron strong charges are each nearly 100 times greater in magnitude than the elementary charge, as determined by the Standard Model. The electron strong charge is only 2.335 times stronger than the elementary charge, when we view the strength of single dimension charge. The Standard Model does not recognize the strong charge of the electron, but if it did, we would likely observe it in electron plasmas.

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[134] "Elementary Particles ," The Columbia Encyclopedia , 6th ed.

$$\sqrt{e^2} = 1e \tag{9.19}$$

$$\sqrt{e_{p\max}{}^2} = 100.058e \tag{9.20}$$

$$\sqrt{e_{n\max}{}^2} = 100.127e \tag{9.21}$$

$$\sqrt{e_{emax}{}^2} = 2.335e \tag{9.22}$$

	Unified Force Theory Relative Charge Strengths	Standard Model Relative Force Carrier Strengths[135]
Elementary Charge	1	1
Strong Charge		
Proton	100.058	100
Neutron	100.127	100
Electron	2.335	(Strong nuclear force of electron not recognized)
Weak Interaction		
Proton	9.988×10^{-5}	10×10^{-5}
Neutron	9.975×10^{-5}	10×10^{-5}
Electron	0.183	(Weak interaction of electron not recognized)

The weak nuclear interaction calculates for the proton and neutron as:

$$8\pi p = 9.988\times10^{-5} \tag{9.23}$$

$$8\pi n = 9.975\times10^{-5} \tag{9.24}$$

Since both results are already ratios comparing the electrostatic charge to strong charge, they remain just as they are. So in comparing the electrostatic charge, strong charge, and weak interaction, the Aether Physics Model makes a direct hit when it predicts the relative strengths of the force carriers as seen by the Standard Model. For a more detailed comparison of the relative strengths of the forces see our paper, Calculations of the Unified Force Theory:

http://www.16pi2.com/files/Calculations_UFT.pdf

More on the Strong Force

The strong force compared to the electrostatic force between the protons is 1,581,000 times stronger. The strong force compared to gravitational

[135] The relative strengths of the forces differ widely from source to source. The values shown here are from tables the author grew up with, but no longer has reference to. Most sources today quantify the relative strength between the strong force and electrostatic force as being equal to the fine structure constant, which is totally baseless. Some sources also show the relative strength between all the forces in terms of the electron fine structure constant.

force between the protons is in the order of 10^{42} times greater.

$$\frac{rmfd\,\dfrac{e_{pmax}\cdot e_{pmax}}{\lambda_C{}^2}}{k_c\,\dfrac{e\cdot e}{\lambda_C{}^2}} = 1.581\times 10^{6} \tag{9.25}$$

$$\frac{rmfd\,\dfrac{e_{pmax}\cdot e_{pmax}}{\lambda_C{}^2}}{G\,\dfrac{m_p\cdot m_p}{\lambda_C{}^2}} = 1.954\times 10^{42} \tag{9.26}$$

As in the case of the electron, the ratio of strong force between protons at one quantum distance, to the gravitational force between protons, is equal to the ratio of the mass associated with the Aether to the mass of the proton:

$$\frac{m_a}{m_p} = 1.954\times 10^{42} \tag{9.27}$$

At one quantum distance, the strong force clearly rules. From the above equations, it is possible to find the distances where the forces are relatively equal to each other. In the case of the proton strong force compared to the proton gravitational force, to equal the gravitational force between two protons at one quantum distance, two protons would have to be $3.391\times 10^{9} m$ apart to experience the same magnitude in the strong force. However, in order for the strong force to be in effect, the two protons would also have to be magnetically aligned with each other. The south pole of one proton must face the north pole of the other proton in order to effect a complete strong force attraction.

There is a popular myth that the strong force does not reach beyond a very short distance; however, this short reach is in appearance only. The strong force is so strong, that after a certain distance, an onn must contend with the strong force that carries by all other onta within force range. The effect is a type of magnetic suspension in space. Gravity would have a similar problem if it were both repulsive and attractive. However, since gravity is linear and always attractive (except to anti-matter), it penetrates uniformly through all strong charge and electrostatic charge.

However, when a group of onta has all or most of its strong charge magnetically aligned (such as in a crystal), then the strong force emerges more noticeably than the gravitational force and manifests as permanent magnetism. Most magnetic effects are due to electron magnetic alignment, but there are likely special cases (such as neutron stars) where the magnetism is due to the magnetic alignment of protons and neutrons.

Casimir Effect

> "The Casimir effect is a small attractive force which acts between two close parallel uncharged conducting plates. It is due to quantum vacuum fluctuations of the electromagnetic field…," from "What is the Casimir Effect?" by Philip Gibbs[136].

The equation for calculating the attractive Casimir force between two plates is shown below. We chose the area A separated by a quantum distance L to be the length and area for quantum measurement analysis purposes.

$$L = \lambda_C$$
$$A = \lambda_C{}^2$$

$$\frac{\pi \cdot h \cdot c}{480 \cdot L^4} A = 2.208 \times 10^{-4} newton \tag{9.28}$$

The Dutch physicist Hendrick Casimir developed the form of the above equation in 1948. In 1996, Steven Lamoreaux conducted an experiment that verified the Casimir effect equation to within 5%[137].

Looking at equation (9.28), we see the $h \cdot c$ in the numerator. In the Aether Physics Model, $h \cdot c$ is equal to the unit of the photon.

> "Casimir realised that between two plates, only those virtual photons whose wavelengths fit a whole number of times into the gap should be counted when calculating the vacuum energy," Gibbs said.

It is no error that the equation for the Casimir Effect contains the APM unit for the photon in the numerator. But as will be seen shortly, the so-called "virtual photons" are mathematically shown to be the result of the strong charge of the electron being acted upon by the strong force.

Using the Aether Physics Model, let us modify Casimir's equation by replacing $h \cdot c$ with the $phtn$ unit and express the force in units of $forc$.

$$\frac{\pi \cdot phtn \cdot A}{480 \cdot L^4} = 6.545 \times 10^{-3}\ forc \tag{9.29}$$

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[136] The Physics and Relativity FAQ, as a collection, is © 1992--2002 by Scott Chase, Michael Weiss, Philip Gibbs, Chris Hillman, and Nathan Urban. http://math.ucr.edu/home/baez/physics/Quantum/casimir.html

[137] Lamoreaux, Steven K., Demonstration of the Casimir Force in the 0.6 to 6 mm Range (Physical Review Letters, VOLUME 78, NUMBER 1, 1996)

Because we have chosen the quantum distance for L and the quantum distance squared for A, the numerical terms produce an identity.

$$\frac{\pi}{480} = 6.545 \times 10^{-3} \tag{9.30}$$

The numerical π divided by 480 is too close to $\frac{1}{16\pi^2} = 6.333 \times 10^{-3}$ to ignore. Could it be that the Casimir equation was calculated or inferred incorrectly? Perhaps it should be:

$$\frac{phtn \cdot A}{16\pi^2 \cdot L^4} = 6.333 \times 10^{-3}\ forc \tag{9.31}$$

A comparison of the numerical term in the original Casimir equation to the assumed $16\pi^2$ numerical term gives:

$$\frac{6.545}{6.333} = 1.033 \tag{9.32}$$

The Casimir value is just 3.3% greater than the $16\pi^2$ value. In 1996 Steven Lamoreaux empirically measured the Casimir Effect to within 5% of the Casimir equation. Therefore, the assumed $16\pi^2$ value could be correct.

What's the point of this exercise? $16\pi^2$ is the geometrical constant of the Aether in the Aether Physics Model. According to an article about the Casimir effect research of U. Mohideen and Anushree Roy, published in the Physical Review[138],

> "...the most puzzling aspect of the theory is that the [Casimir] force depends on geometry: If the plates are replaced by hemispherical shells, the force is repulsive. Spherical surfaces somehow "enhance" the number of virtual photons."

The shape of $16\pi^2$ is a double loxodrome and it is equal to the spherical constant squared. As shown in the neutron equation for the neutrino (page 184), Aether folds according to its spherical geometry in order to trap the angular momentum known in the Standard Model as the anti-neutrino.

Of further interest is that $\frac{phtn}{16\pi^2}$ is equal to the strong charge of the electron times Coulomb's constant.

[138] The Force of Empty Space (Focus, Physical Review, 1998) http://focus.aps.org/story/v2/st28

$$\frac{phtn}{16\pi^2} = k_C \cdot {e_{emax}}^2 \tag{9.33}$$

So the Casimir equation can transpose as:

$$k_C \frac{{e_{emax}}^2 \cdot A}{L^4} = 6.333 \times 10^{-3}\ forc \tag{9.34}$$

And so it appears that the Casimir effect is the result of the electron strong charge of the electrons in the metal plates affecting each other through a form of Coulomb's law. But Lamoreaux clearly states in his paper, "There was no evidence for a $\frac{1}{a^2}$ force in any of the data…."[137] But even though the force is not an inverse square force, it does increase rapidly with the closer distances, as he writes, "The Casimir force is nonlinear and increases rapidly at distances less than $0.5\mu m$." This is entirely consistent with the strong force law as it increases according to the inverse square law, but at a rate $16\pi^2$ times sharper than the electrostatic force.

Taking the area and lengths to be the quantum length, the adjusted Casimir equation transposes and simplifies as the Aether Physics Model strong force equation for the electron:

$$A_u \frac{e_{emax} \cdot e_{emax}}{{\lambda_C}^2} = forc \tag{9.35}$$

So the success of the Casimir effect experiments is evidence of the existence of the strong charge of the electron, as well as the electron strong force law. The experiments also provide evidence to support the Aether Physics Model's assertion that the photon is equal to the angular momentum of the electron times the speed of light.

To calculate the force between two Casimir plates, measure the strong charge of each plate, divide by the distance between them squared, and multiply by the Aether constant. The strong charge is easy to calculate, because it is always proportional to the mass. In the Casimir effect experiment, the mass is that of the free electrons placed on each plate.

Another observation about Lamoreaux's experiment:

> With the Casimir plates separated but externally shorted together, there was an apparent shockingly large potential of 430 mV; there are roughly 40 separate electrical connections in this loop and a potential this large is consistent with what is expected for the various metallic contacts. This potential was easily canceled by setting an applied voltage between the plates to give a minimum δV; this applied voltage was taken as "zero" in regard to the calibration.

The "apparent shockingly large potential of 430 mV" seemed anomalous because only 300mV had applied to the plates. Instead of interpreting the increased potential as an artifact of the Casimir effect, Lamoreaux sought to dismiss it as the result of various metallic contacts. Lamoreaux did not explain exactly what physical principle he thought it was that produced the increased potential. It seems he would have been careful enough to avoid thermoelectric effects, so it is unclear just what process he thought caused the extra 130mV of potential across shorted plates.

An alternative to the "40 separate electrical connections" explanation is that photons emerged from the Aether between the plates. The angular momentum for the photons would have come from between the Aether units (dark matter) as described in the neutrino section (page 186), thus there is conservation of angular momentum.

It may have been that the short between the plates provided a resistance load. That may have converted the photons into electrons via the photoelectric effect, in which case the electrons flowed in order to balance the opposite potentials of the plates.

General Relativity Theory

From the preceding sections, we have seen the importance of the weak interaction constant (8π) in relating the electrostatic charge of Aether (e^2) with the electromagnetic charge of matter. We have also seen that electrostatic charge influences the spin behavior of onta through magnetic moment. Therefore, it is that Aether (Einstein's space-time) interacts with onta (mass-energy). Einstein's field equation for this relationship reduces to:

$$G = 8\pi T \tag{9.36}$$

where G is the space-time curvature tensor and T is the mass-energy tensor.[139]

According to General Relativity Theory, light bends because of the effect of gravity on the surrounding space-time curvature. The problem with this concept is that gravity needs two masses to exert its effect. There is nothing in space-time for the gravity to act on with regard to the mass of the object that curves space-time. It is simply assumed, without rationale, that the presence of a massive body will somehow affect space-time simply because it has a lot of gravitational mass.

In the Aether Physics Model, the bending of light around a massive object has nothing to do with gravity. We recall that mass is directly proportional to the strong force. As neutrons form from strong force

[139] Charles W. Misner, Kip S. Thorne, John Archibald Wheeler Gravitation (W.H. Freeman and Company, 1973) 407

binding, Aether units fold and stretch the surrounding fabric of space inward toward the binding. On a massive scale, such as around stars, the stretched space causes a lensing effect for passing photons.

The strong force mediates by the strong charge, or electromagnetic charge. The spherical resonance of Aether is the source of electrostatic charge. Therefore, the electrostatic charge of Aether acts upon the strong charge of matter. The strong charge is the effect of the angular momentum (dark matter) of the onn spinning within the conductance of the Aether.

The Aether Physics Model analysis of the unit of magnetic moment proves that Aether electrostatic charge can affect the strong charge of matter. Furthermore, simple experiments exist, which provide empirical data that Aether electrostatic charge directly interacts with the strong charge of onta.

For several years, Jean Louis Naudin has been experimenting with electrostatic propulsion via asymmetric capacitors, often called "lifters," or "asymmetric capacitors." Posted on his web site are over 300 independent replications of the lifter in various manifestations.[140] According to the Aether Physics Model, the lift occurs when the Aether dipoles align due to the electrostatic charge of the thin conductor compared to the broad conductor. The surrounding gross medium (atmosphere, oil, etc) amplifies this effect.

Simultaneously, the strong charge of the larger conductor attracts to the electrostatically aligned Aether units. The key to electrostatic propulsion, it would seem, is in designing a thin, lightweight material with magnetically aligned crystal structure, or at least a material with electrons that realign freely.

Just as the unified charge equations show the relationship of electrostatic to electromagnetic charge in asymmetric capacitors, the same mechanics hold true for larger objects.

Special Relativity Theory

There are comments made in previous pages concerning the lack of evidence for the equivalence of energy and mass. The mathematical foundation of mass/energy equivalence clashes with established definitions of equalities, and the background noise of relativistic experiments buries any data that might support SRT. Although scenarios involving photons work well with SRT, scenarios involving gross matter, do not.

However, the Lorentz transformations adopted by Special Relativity theory developed around the fluid Aether concept, in the first place. Therefore, in any mechanical reference, moving frames are essentially the same thing

[140] http://jnaudin.free.fr/

as regions of Aether moving relative to other regions of Aether.

As the Aether Physics Model was developed, there was a careful review of the data and theory supporting Special Relativity. All other conventional physics theories could find a correspondence in the Aether Physics Model. This author cannot determine that mass/energy equivalence was ever a proper theory and can find no analog for it in the Aether Physics Model.

Natural Log

John Neiby observed an interesting curiosity while investigating the Aether Physics Model. He noted the square of the natural log e could approximately express in terms of the strong charge, electrostatic charge, electron fine structure, and pi.

$$(1+\alpha)\frac{e_{emax}}{e}\pi = (\log e)^2 \tag{9.37}$$

Chapter 10

ATOMIC MECHANICS

How Atoms Release Energy

The nuclear binding force quantifies according to equation (10.1), for reasons explained in the previous chapter:

$$k_C \cdot \frac{{e_{pmax}}^2 + {e_{nmax}}^2}{{\lambda_C}^2} = 23.271\, forc \tag{10.1}$$

In the atom, the total binding force (nuclear binding plus electron binding) calculates from the sum of all electromagnetic charge in the electrons, protons, and neutrons. For example, the total force applied by the Aether to hold deuterium together is:

$$k_C \frac{(Z \cdot {e_{pmax}}^2 + N \cdot {e_{nmax}}^2 + Z \cdot {e_{emax}}^2)}{{\lambda_C}^2} = 23.278\, forc \tag{10.2}$$

where Z is the number of protons and electrons in deuterium, and N is the number of neutrons.

The distributed Compton wavelength is the surface between charges because it provides the quantum surface area of any spin position of the Aether.

In addition, since the onn primary angular momentum is spinning in an Aether unit, two onta together would require an overlap of the Aether. The only time Aether space overlaps is when two onta bind together through the strong force, causing the Aether to fold over onto itself. Two Aether units without angular momentum existing in them cannot overlap.

Length exists as only two dimensions within the Aether unit; the third dimension of length in volumetric space is due to the distance between Aether units, which is one quantum distance. Therefore, in an atom, the

shortest distance available for photons to travel from one Aether unit to the next is usually one Compton wavelength.

However, due to the binding force of onta, the Aether units either slightly pull toward each other or else push slightly away, depending on the magnetic orientation of the onta.

At the Quantum level, Coulomb's law can be modified to directly calculate the amount of energy that it should take to separate a nucleus, based on the number of onta in the atom. So the total energy it would take to separate the nucleus of Helium 4 if the distance between onta were one quantum distance is equal to 23.783MeV:

$$k_C \frac{(Z \cdot e_{pmax}{}^2 + N \cdot e_{nmax}{}^2)}{\lambda_C{}^2} \cdot \lambda_C = 23.783 MeV \qquad (10.3)$$

Physicists have tested all known atomic isotopes for their actual "binding energy" over the years. A complete list of atomic masses for calculating binding energies for isotopes is available at the National Institute for Standards and Technology (NIST)[141].

It is important to remember that atoms do not bind with energy; they bind with force. The "binding energy" is the actual amount of energy that would be required to pull the atom apart, if such a thing occurs.

The actual "binding energy" never agrees with the calculated "binding energy" because Aether units slightly change their distance from each other depending on the configuration of the nuclear strong charges. In the Standard Model, the difference between the calculated binding energy and the measured binding energy designates as "mass defect." The term "mass defect" implies that something has happened to the mass. However, since mass is merely a dimension, nothing ever happens to the mass. It defies logic to suggest that the dimension or measurement of mass converts to a unit of energy.

Using helium 4 as an example, the NIST measured binding energy is 28.293MeV. In equation (10.3) the calculated binding energy for helium 4 is 23.783MeV. The ratio of actual to calculated binding energy is:

$$\frac{28.293 MeV}{23.783 MeV} = 1.19 \qquad (10.4)$$

Therefore, Helium 4 has caused an average change of distance between Aether units that is equal to $1.19\lambda_C$. The difference between the measured binding energy and APM calculated binding energy is

[141] Atomic Weights and Isotopic Compositions for All Elements http://physics.nist.gov/cgi-bin/Compositions/stand_alone.pl?

4.510MeV. If the APM binding energy equation and NIST measured binding energy are correct then the difference must be due to a change of distance between Aether units.

Energy is stored as magnetic tension between the Aether units. When the nuclear binding releases, the extra tension also releases. Therefore, there is not only energy released due to the onta unbinding, but also there is energy released due to the Aether unbinding. Further, due to the Casimir effect, the process of producing photons from dark matter also adds energy to the nuclear reaction. Thus, we generally explain the energy release observed in fission.

Nevertheless, there is also an energy gain from fusion. That is, while there is extra energy when the onta unbind (fission), there is also extra energy when the onta bind (fusion). When two onta come near each other, the Aether causes the strong force that magnetically attracts the strong charges. This is just like two magnets that get too close to each other, which suddenly gain energy, align their poles, and accelerate until contact. Like fission, the nuclear binding not only exerts force between onta, but also between Aether units. The force between Aether units results in a change in distance, which stores energy. In addition, the Casimir effect comes into play once more as onta magnetically align at the correct distance to create photons.

The constant process of assembling and disassembling atoms creates photons from the interaction of dark matter and Aether, which manifests as energy. The design of Liquid-Metal-Cooled Fast Breeder Reactors to produce more fuel than they consume[81] is an interesting curiosity. The scientists must have known something about atomic reactions in order to design nuclear power plants in such a manner.

There is no conversion of mass into energy. The apparent conversion of mass to energy in atomic nuclei is due to the binding of space-time along with the binding of matter. In addition, photons produce through the Casimir effect, which provide even more energy. The Aether is doing work regardless of whether the atoms fuse or fizz. The process of assembling and disassembling matter to get "free energy" is similar to a pumping action, except that it pumps angular momentum from dark matter into the visible Universe. The extra angular momentum that pumps into the visible Universe ultimately returns to dark matter when black hole implosion events occur and evaporate. Thus, angular momentum is truly conserved and recycled.

With regard to internal nuclear lengths (distances between Aether units), not all atoms have a net distance between Aether units of greater than one quantum distance. Of all the stable atomic isotopes, only Lithium 7 has a net distance between Aether units of less than one. What does this mean? It means Lithium has more potential than other stable isotopes to manipulate the Aether and cause it to work.

It follows that if Lithium combines either with another element or disassembles and reassembles through a resonant oscillation, then it may induce the Aether to generate photons, which could contribute to the amplitude of the oscillation. The excess amplitude manifests as heat and radiates photons. The photons may then convert to electrons via the photoelectric effect. In addition to electron-sized photons, the process may also generate proton-sized photons. Tapping the energy of the Aether through Lithium may be as simple as bombarding Lithium with X-rays or microwaves.

There are reports that Lithium batteries explode with more energy than expected[142]. Such explosions occur near X-ray machines, in medical equipment, and near airport security systems. Even internal excitation from heat causes Lithium batteries to explode. The lithium itself is not explosive, but it tends to acquire excess energy that must be released somewhere.

Lithium is not the only isotope that would appear to draw energy from the Aether. Below is a table of all the isotopes with a net distance of less than one quantum distance between Aether units. From the table we can see that deuterium (H2) and tritium (H3) are also excellent candidates for drawing energy from the Aether. Although there are other excellent candidate isotopes, the quantities of those isotopes in nature are limited.

EL = element, A = atomic number.

EL	A	Measured Binding Energy	Calculated Binding Energy	Net λ_C
H	2	2.224MeV	11.895MeV	0.187
H	3	8.481MeV	17.849MeV	0.476
H	4	5.579MeV	23.802MeV	0.235
H	5	2.743MeV	29.756MeV	0.092
H	6	5.784MeV	35.709MeV	0.162
He	3	7.717MeV	17.837MeV	0.433
He	5	27.406MeV	29.744MeV	0.923
He	6	29.266MeV	35.698MeV	0.821
He	7	28.822MeV	41.651MeV	0.693
He	8	31.404MeV	47.605MeV	0.661
He	9	30.256MeV	53.558MeV	0.566
He	10	30.335MeV	59.512MeV	0.510

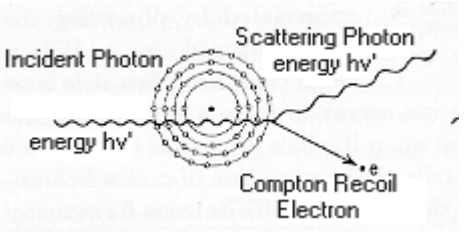
[142] "Lithium batteries don't emit strong enough bursts of energy to run power tools or computer hard drives and, because of lithium's reactivity, they are prone to explode." John Carpi, "Green Batteries: Powering Innovation," E Apr. 1994, Questia, 11 June 2004 <http://www.questia.com/>.

EL	A	Measured Binding Energy	Calculated Binding Energy	Net λ_C
Li	4	4.620MeV	23.778MeV	0.195
Li	5	26.326MeV	29.732MeV	0.887
Li	6	31.992MeV	35.686MeV	0.898
Li	7	39.240MeV	41.639MeV	0.944
Li	8	41.273MeV	47.593MeV	0.868
Li	9	45.336MeV	53.546MeV	0.848
Li	10	45.311MeV	59.500MeV	0.763
Li	11	45.637MeV	65.453MeV	0.698
Li	12	44.408MeV	71.407MeV	0.623
Be	6	26.921MeV	35.674MeV	0.756
Be	7	37.596MeV	41.627MeV	0.904
Be	12	68.642MeV	71.395MeV	0.963
Be	13	68.136MeV	77.349MeV	0.882
Be	14	69.975MeV	83.302MeV	0.841
B	7	24.715MeV	41.615MeV	0.595
B	8	37.734MeV	47.569MeV	0.794
B	15	88.182MeV	89.244MeV	0.989
B	16	88.137MeV	95.197MeV	0.927
B	17	89.576MeV	101.151MeV	0.887
B	18	89.041MeV	107.104MeV	0.832
B	19	90.070MeV	113.058MeV	0.798
C	8	24.780MeV	47.557MeV	0.522
C	9	39.030MeV	53.511MeV	0.730
C	21	118.831MeV	124.953MeV	0.952
C	22	120.279MeV	130.907MeV	0.920
N	10	35.533MeV	59.452MeV	0.598
N	11	58.338MeV	65.406MeV	0.893
N	24	141.180MeV	142.802MeV	0.990
O	12	58.543MeV	71.347MeV	0.822
O	13	75.550MeV	77.301MeV	0.979
F	14	72.341MeV	83.243MeV	0.870

Photon Mechanics

In 1923, Arthur Compton noted that J.J. Thomson's model of the electron did not account for the lower frequency (longer wavelength) associated with "electron scattering." To account for this, Compton imagined the photon as a billiard ball that passed through the atom and dislodged

electrons from a force within the atom according to the Doppler principle[143].



Photon scattering – Standard Model [144]

Compton's theory, like so many other theories in the Standard Model, accounts for the momentum of an imaginary, miniature billiard ball, as though the momentum were something real and the billiard ball was something imaginary. It explains the scattering of radiation in terms of corpuscular photons, but not how the photons always manage to miss the nucleus of the atom.

Further, Compton's theory of a corpuscular incident photon assumes that the light emits as bullets that happen to shoot directly at the target.

Imagine an experiment setup where the researcher is going to measure the Compton Effect at 90 degrees from the angle of the incoming "billiard ball" photon. Only one photon emits. The photon scatters at 135 degrees, instead of toward the sensor, which resides at 90 degrees. The experiment should show a null result. In fact, if the experiment is repeated many times over, it should show a null result almost 100% of the time because the odds of the photon being reflected exactly toward the sensor is about 1/360 (assuming that the sensor is set up to receive photons over an arc of 1 degree).

Nevertheless, aside from the defects in logic in the billiard ball explanation of particles, Compton's equations are still applicable to the Aether Physics Model's explanation of incident radiation. This is because Compton's equations based upon the empirical data. We will look at the same empirical data but give a different interpretation of it.

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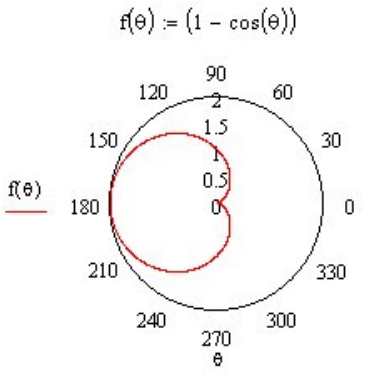
[143] "It is of interest to note that according to the classical theory, if an x-ray were scattered by an electron moving in the direction of propagation at a velocity β'c , the frequency of the ray scattered at an angle θ is given by the Doppler Principle as $\nu_\theta = \nu_0 \Big/ \left(1+\frac{2\beta'}{1-\beta'}\sin^2\frac{\theta}{2}\right)$" Morris H. Shamos, Great Experiments in Physics "Firsthand Accounts from Galileo to Einstein" (New York, Dover Publications Inc., 1987) 353

[144] Graphic from Nuclear Radiation Physics, 1949

Looking at a polar plot of Compton's equation for the scattering x-rays, we can see the general shape of what the electron should look like. The graph on the left represents the general shape of the electron since it radiates photons at these shapes. If the electron were circular, the plot would be circular, and if the electron were square, the plot would reflect the square-ness of the electron.



In the Aether Physics Model, the onta model as loxodromes through space-resonance. When we look down the time axis we can see that an onn would look like a cardioid as perceived through human eyes (from within the forward time direction of half-spin onta).

The image produced by Compton's equation for the scattering x-rays of electrons looks like the cardioid shaped electron as modeled in the Aether Physics Model as seen in the image at right. However, even though the APM loxodrome and Compton cardioid look alike, they are quantifiably different in proportion[145]. The Compton function extends at twice the rate of expansion at 180 than the loxodrome function.

According to the Aether Physics Model, photons are true quantum "particles" and have no inherent frequency as they do in the Standard Model. Light is a unit to describe photons emitted *at* a frequency.

$$ligt = phtn \cdot freq \tag{10.5}$$

Light is essentially, then, accelerating angular momentum.

$$ligt = h \cdot accl \tag{10.6}$$

When light strikes an atom, angular momentum from the light is absorbed and transferred to the valence electron. The absorption is a process of decelerating angular momentum.

Light Radiation

It often states that light travels in straight lines, such as a ballistic particle. This is not entirely true. A line has two directions, light travels specifically from the source, outward, and only in one direction (the forward direction). Therefore, light travels as a ray, not as a line.

Further, if light were a particle, and several rays were cast from a source, then

[145] Per explanation by Dr. Lester Hulett in conversation with the author.

at some great distance there will be gaps between the light particles. At a great distance, the source would become invisible for some observers and not for others, or there would be a flickering as light particles randomly arrived at a target.

However, in reality, a light source seen from a great distance does not flicker and spaces do not appear between light particles. A decrease in light intensity observes with distance, indicating that light is spreading as it travels. The simple explanation is that light emits as a cardioid band of angular momentum from the source and expands radially. Part of the photon always remains connected to the source[146]. In most cases, the bands of light emit in all orientations as the emitting electrons arrange in all orientations, thus giving the appearance of spherical emission. However, in polarized crystals light emits with all the bands horizontally aligned.

The observed lengthening of the wavelength produced by the target atom can be accounted for when we take into account the full angular momentum of the source atom valence electron.

A valence electron in an excited system will give off photons at a certain frequency.

$$ligt = phtn \cdot freq \tag{10.7}$$

The wavelength of this emitted light is variable and satisfies Compton's wavelength function of $1-\cos(\theta)$. Since the frequency of light can express in terms of wavelength, the light unit can notate as:

$$ligt = phtn\frac{c}{\lambda_C} \tag{10.8}$$

According to Compton, the wavelength of the light will depend on the angle from which it views.

The wavelength of light is a function of the viewing angle:

$$f(\theta) = 1-\cos(\theta) \tag{10.9}$$

$$ligt = phtn\frac{c}{\lambda_C f(\theta)} \tag{10.10}$$

What this means is that light is transmitted perpendicular $\left[\theta = \left(\frac{1}{2}\pi, \frac{3}{2}\pi\right)\right]$ to the direction of electron flow through a radiator at the same frequency of the source oscillation, and at different frequencies from other angles.

[146] As proposed by Dr. Cynthia Whitney.

It also means that there is no light transmitted in the direction from which the photons or electrons are coming.

Absorption

The Aether units of the visible Universe cycle to the rhythm of the quantum frequency. This means the Aether units cycle between forward and backward time. In each cycle of forward and backward time, all the processes of the Universe that are going to occur do so in that moment. Physical matter, for whatever reason, can only see the forward time portion of the cycle. Thus, onta exist only as half-spin.

So in one quantum cycle all the processes that are going to take place, take place in forward time, and they remain dormant through the backward time phase.

At the atomic level, angular momentum among atoms transmits in the form of photons and electrons. We will look at the case of photons already transmitted and that are now being absorbed.

Photons emit from different atoms at a wide range of frequencies, meaning that photon angular momentum arrives at atoms at various times and in various quantities. In one quantum moment $\left(T_q\right)$ there are a given number of photon "fronts" arriving at an atom. The photon front has a certain amount of angular momentum available to transfer to the atom. In order for that angular momentum to be absorbed, the frequency of the arriving light synchronizes to the frequency of the atom or molecule receiving the light, otherwise it reflects. If the frequency of the atom or molecule is a frequency of the arriving light, or even a harmonic frequency, the light will instantly decelerate, thus being absorbed into the atom or molecule.

$$\frac{ligt}{accl} = h \tag{10.11}$$

The amount of angular momentum that will be absorbed into the system will depend on the distance between the source and the target, and on their frequencies. The further the distance between the two, the weaker the angular momentum becomes, due to divergence. (The angular momentum is not lost; it spreads over a greater area and thus less angular momentum is contacting the atom or molecule.) The further out of sync the two frequencies are, the less angular momentum will be absorbed.

Emission

In the first two editions of "Secrets of the Aether", we published hypothetical views on how emissions might take place in the Aether Physics Model. Now that we are getting a clearer view on some aspects of the Aether, it is apparent that photon structure is more complicated than originally thought. The photons expand yet remain connected to their source.

There seems to be several different processes for absorbed angular momentum to be stored in the atom, and thus several different methods for the stored angular momentum to re-emit.

Consistent with the rest of the APM, we withdraw our emissions explanations until we have specific data to work with.

The Dimensions of Light

In the Aether Physics Model, a photon is a true quantum "particle." In the Standard Model a quantum photon can have any value of inherent frequency. A quantum photon with frequency is meaningless because it is not possible for a single quantum particle to exhibit frequency. It is like one hand clapping, or an ocean consisting of one water molecule.

In the APM, the photon quantifies as the angular momentum of the electron times the speed of light.

$$phtn = h \cdot c \tag{10.12}$$

The Aether Physics Model describes light as photon times frequency.

$$ligt = phtn \cdot freq \tag{10.13}$$

Since angular momentum and the speed of light are constant, the unit of light changes only by the frequency. So light with a frequency of 50MHz is equal to:

$$50MHz \cdot phtn = 4.047 \times 10^{-13} ligt \tag{10.14}$$

The unit of light (ligt) pertains to the mechanics of a single atom or molecule. The intensity of light is equal to the unit of light times the number of active atoms or molecules that produce light.

Power

To find out how much power emits by light at a given distance from the source, divide light by the distance:

$$\frac{ligt}{leng} = powr = 1.012 \times 10^{7} watt \tag{10.15}$$

The powr unit is the quantum unit of power. At a distance of one Compton wavelength, the light of one atom outputting 4.047×10^{-13} ligt radiates 4.047×10^{-13} powr, or 4.094×10^{-6} watt.

Irradiance

To obtain the irradiance of light of a given frequency, divide the light by the volume of illumination:

$$\frac{ligt}{volm} = irrd = 1.718 \times 10^{30} \frac{kg}{sec^3} \tag{10.16}$$

where irrd is a quantum unit of irradiance.

Gravitation Generated Photons

The gravitational constant is also responsible for producing a photon among onta. Just as the Aether unit (rotating magnetic field) produces a photon between strong charges, the gravitational constant (gravity) produces a photon between masses.

$$rmfd \cdot e_{emax} \cdot e_{emax} = phtn \tag{10.17}$$

$$G \cdot m_e \cdot m_e = 2.788 \times 10^{-46}\ phtn \tag{10.18}$$

The production of photons from mass is much stronger in the heavier proton and neutron (although still considerably smaller than the strong charge generated photon):

$$G \cdot m_p \cdot m_p = 9.398 \times 10^{-40}\ phtn \tag{10.19}$$

The creation of photons between strong charges verifies in the experiments that prove the Casimir effect. The strong charge and mass of an onn are directly proportional, as they are two characteristics of the same thing. However, mass is single dimensional (a line) whereas strong charge is two-dimensional (surface-like) so that it is highly inefficient to produce photons from mass.

Fields

The Aether unit is a dynamic rotating magnetic field. It appears to be a living fabric that provides the space-resonance in which onta exist. As shown in the Aether Physics Model, all three physical manifestations of force (electrostatic, electromagnetic, and gravitational) trace back to the Gforce, which in turn emanates through the Aether unit. The Gforce acts upon electrostatic charge, electromagnetic charge, and mass in different ways, hence the appearance of three different manifestations of force.

The influence of Gforce, as it acts upon dimensions, is the APM equivalent of what the Standard Model considers a "field." In the APM, the Aether is the field. Since the Gforce acts through the Aether on mass, it produces a gravitational field. Similarly, the Gforce acting through the Aether on electrostatic charge and electromagnetic charge produces the electrostatic and electromagnetic fields. All three fields are different views of the same Aether acting upon the different "carriers" of electrostatic charge, electromagnetic charge, and mass.

The Columbia Encyclopedia describes the field as:

> Fields are used to describe all cases where two bodies separated in space exert a force on each other. The alternative to postulating a field is to assume that physical influences can be transmitted through empty space without any material or physical agency. Such action-at-a-distance, especially if it occurs instantaneously, violates both common sense and certain modern theories, notably relativity, which posits that nothing can travel faster than light.

The Aether Physics Model quantifies the Aether as a fabric of quantum rotating magnetic fields, which in turn is also the electrostatic field and gravitational field when seen from different perspectives. The Standard Model postulates the existence of the field, but denies the existence of the Aether. Denying the Aether violates common sense, since the Aether mathematically demonstrates as the substance of the fields. With the Gforce acting simultaneously throughout the Universe to maintain Aether units, we eliminate the objection of the apparent "action at a distance" argument.

The rest of this section touches upon the topic of electrodynamics from within the paradigm of the Aether Physics Model. Certain electrodynamic units undefined in the Standard Model can exist in the Aether Physics Model because the APM has the correct distributed dimensions of charge. Nevertheless, there is a need for more research before a complete electrodynamics results from the APM.

Magnetic Field

> A moving charge gives rise to a magnetic field, and if the motion is changing (accelerated), then the magnetic field varies and in turn produces an electric field. These interacting electric and magnetic fields are at right angles to one another and also to the direction of propagation of the energy.[147]

In the Aether Physics Model, a magnetic field is literally the flow of electromagnetism:

$$mfld = flow \cdot mchg \tag{10.20}$$

where mchg is electromagnetism expressed as the universal mass to charge ratio.

Strong charge produces the magnetic field as it drags through the Aether. The unit of drag (page 126) is equal to resistance times length:

$$drag = resn \cdot leng \tag{10.21}$$

The magnetic field is then equal to charge times drag:

[147] "Electromagnetic Radiation ," The Columbia Encyclopedia , 6th ed.

$$mfld = chrg \cdot drag \tag{10.22}$$

Recognition of the mechanics of magnetic fields, caused by a dragging of electromagnetic charge through the Aether, will yield greater insight into magnetic fields.

Magnetic Field Intensity

The conductance of the Aether is responsible for creating strong charge as angular momentum spins in it. The conductance of the Aether, when exerted as a force, produces magnetic field intensity.

$$mfdi = forc \cdot cond \tag{10.23}$$

The magnetic field intensity acting on other magnetic fields does work:

$$mfld \cdot mfdi = enrg \tag{10.24}$$

Electric Field

Just as the magnetic field is the flow of electromagnetism, the electric field is the flow per strong charge:

$$efld = \frac{flow}{chrg} \tag{10.25}$$

The electric field, however, is not as important in modern electrodynamics as its strength.

Electric Field Strength

In the Aether Physics Model, the reciprocal of the electric field strength is equal to capacitance times length:

$$\frac{capc \cdot leng}{4\pi} = \frac{1}{elfs} \tag{10.26}$$

Thus, the electric field strength of a capacitor is reciprocal to the capacity of the plates and the thickness of the dielectric.

The electric field traditionally explains as force per charge:

$$elfs = \frac{forc}{chrg} \tag{10.27}$$

Electric field strength relates to the electric field when the electric field has momentum per volume of effectiveness.

$$elfs = \frac{efld \cdot momt}{volm} \tag{10.28}$$

In Maxwell's electrodynamics, the electric field strength is more important than the electric field itself. The electric field strength works orthogonally to the magnetic field to produce transverse electromagnetic waves.

When the electric field strength is applied to other electric fields, we get an insulation unit, which is equal to resistance times temperature:

$$efld \cdot elfs = resn \cdot temp \tag{10.29}$$

Field Interactions

According to the work of Clerk Maxwell, the mechanics of the electric and magnetic fields are normally expressed in terms of the B field (magnetic flux density), the H field (magnetic field intensity), the ε field (electric field strength – or electric field intensity), and the electric flux density (D)[148]. The variable W is the unit of energy (or work). The actual units of magnetic and electric fields rarely appear.

In the Aether Physics Model, these variables convert to quantum units:

$$\begin{aligned} B &= mfxd \\ H &= mfdi \\ \varepsilon &= elfs \\ D &= efxd \\ W &= enrg(tshankha) \end{aligned} \tag{10.30}$$

The Aether Physics Model includes the units of magnetic field, rotating magnetic field, and several others, thus providing a wider range of units for analyzing electrodynamics[149].

The equations related to magnetic field are:

$$mfld = drag \cdot chrg \tag{10.31}$$

$$mfld = mfxd \cdot volm \tag{10.32}$$

$$mfld = \frac{enrg}{mfdi} \tag{10.33}$$

$$mfld = \frac{phtn}{curr} \tag{10.34}$$

$$mfld = 4\pi \cdot \mu_0 \cdot swep \tag{10.35}$$

The equations related to electric field strength are:

[148] Warren B. Boast PhD Principles of Electric and Magnetic Fields (Harper & Brothers, New York, 1948) 399

[149] "ELECTRODYNAMICS - The study of phenomena associated with charged bodies in motion and varying electric and magnetic fields" "Electrodynamics," The Columbia Encyclopedia, 6th ed.

$$elfs = \frac{forc}{chrg} \tag{10.36}$$

$$elfs = mfxd \cdot velc \tag{10.37}$$

$$elfs = mfdi \cdot resn \tag{10.38}$$

$$elfs = \frac{irrd}{mfdi} \tag{10.39}$$

$$elfs = \frac{4\pi}{\varepsilon_0 \cdot area} \tag{10.40}$$

The magnetic field and electric field quantum units are:

$$mfld = \frac{m_e \lambda_C{}^3 F_q}{e_{emax}{}^2} \qquad elfs = \frac{m_e \lambda_C F_q{}^2}{e_{emax}{}^2}$$

The magnetic field can be seen as *flowing* (volume times frequency) *electromagnetism* (mass to charge ratio). The electric field strength can be seen as *accelerating* or *decelerating* (length times frequency squared) *electromagnetism* (mass to charge ratio). Thus the magnetic field would preponderate during maximum current flow and the electric field strength would preponderate during the maximum acceleration and deceleration of current.

The magnetic field and electric field strength are different manifestations of magnetic flux density. The magnetic field is the product of volume times magnetic flux density (10.32) and the electric field is the product of velocity times magnetic flux density (10.37). As the magnetic field increases, the volume associated with the magnetic flux density increases, while its velocity decreases. As the electric field strength increases, the volume associated with the magnetic flux density decreases, while its velocity increases.

The magnetic field is orthogonal to the electric field strength. And since the magnetic field and electric field strength depend upon changing (or alternating) current, the magnetic field acts as a resistance to current and the electric field strength acts as the work (energy) of current. From equations (10.33) and (10.38) we get this relationship:

$$mfld \cdot elfs = resn \cdot enrg \tag{10.41}$$

The photon can be seen as magnetic field times current (10.34). The irradiance of the photon can be seen as electric field strength times magnetic field intensity (10.39).

From equations (10.35) and (10.40) we get:

$$mfld \cdot elfs = \frac{16\pi^2 \cdot \mu_0}{\varepsilon_0} \cdot freq \tag{10.42}$$

Using equation (6.31) (page 121) we can rewrite equation (10.42) as:

$$\frac{mfld \cdot elfs}{freq} = eddy \tag{10.43}$$

Equation (10.43) then indicates that the magnetic field times the electric field strength divided by the frequency of the alternating current yields the eddy current. To reduce eddy current in the core of a transformer, one would take steps either to reduce the magnetic field or electric field strength, or else to increase the frequency. By creating capacitance using laminated core sheets, the electric field strength reduces. In addition, the laminations have the effect of reducing the speed of magnetic field propagation. Changing the properties of a conductor will affect eddy current loss, but engineering a reduction in magnetic field through external systems would also reduce eddy current.

Nuclear Binding Force

The Standard Model of particle physics explains the nuclear binding force in terms of particles, called pi mesons[150]. Standard Model theory states that these particles carry a force that keeps the nucleus bound together. The pi meson hypothesis does not explain how force carries by a particle. One could reasonably expect that if pi mesons were true carriers of force, then binding energy would be composed of pi mesons. For if such a nucleus split, the pi mesons would fly apart and move a distance. (Force times length is equal to energy).

In the Aether Physics Model, the Aether unit mediates the strong force by acting on the strong charge (unless the strong charge takes on a spherical geometry, in which case Coulomb's constant would mediate the force acting on the strong charge). In cases where the strong charges keep a small distance apart, the Aether unit of ***rmfd*** mediates the force manifesting between the strong charges.

$$rmfd \frac{e_{emax} \cdot e_{emax}}{\lambda_C^{\,2}} = forc \tag{10.44}$$

[150] "Pion or pi meson, lightest of the meson family of elementary particles . The existence of the pion was predicted in 1935 by Hideki Yukawa, who theorized that it was responsible for the force of the strong interactions holding the atomic nucleus together. It was first detected in cosmic rays by C. F. Powell in 1947. The pion is actually a multiplet of three particles. The neutral pion, π^0, has a mass about 264 times that of the electron. The charged pions, π^+ and π^-, each have a mass about 273 times that of the electron. The neutral pion is its own antiparticle , while the negative pion is the antiparticle of the positive pion. It is now known that each pion (and, more generally, each meson) consists of a quark bound to an antiquark. Free pions are unstable. The charged pions decay with an average lifetime of 2.55×10^{-8} sec into a muon of like charge and a neutrino or antineutrino; the neutral pion decays in about 10^{-15} sec, usually into a pair of photons but occasionally into a positron-electron pair and a photon." "Pion ," The Columbia Encyclopedia , 6th ed.

Strong force between electrons is equivalent to the expression:

$$\frac{phtn}{\lambda_C{}^2} = forc \tag{10.45}$$

In this expression, we can see how photons can propagate through Aether. The same phenomenon that produces force between any two electromagnetic charges is the phenomenon of photons per area. In other words, the opposite spinning, double cardioid nature of photons caused by the angular momentum within the electron and positron spin positions manifests the same mechanics as an Aether unit acting on strong charges. In cases where the strong charges are bound, or remain far apart, the strong force mediates by the Coulomb constant.

$$k_C \frac{e_{emax} \cdot e_{emax}}{\lambda_C{}^2} = F \tag{10.46}$$

Also, the photon per area that yields a force is reflected in the operation of Crookes' radiometer. A photon is equal to force times area. As photons are absorbed, a force manifests over an area. If photons are reflected, no force will manifest since the photon does not become part of the material. The Crooke's radiometer demonstrates that photons are not particulate and that it is not necessary for mass to manifest as angular momentum (electrons, protons, or neutrons) in order to convey force. The Crooke's radiometer also demonstrates that force is not just a static unit of mass times acceleration, but rather is a true, non-material manifestation of reality. A true, non-material manifestation of force in the Crookes' radiometer is consistent with the dynamic, living Gforce identified as the source of all forces in the Universe.

The physics of photons directly imparting force are also observed in the YORP effect[151] and shining light on soap bubbles[152].

In one of our papers, A New Foundation for Physics, we erroneously stated that a Crooke's radiometer operated by producing positrons, which annihilated with electrons. Although this mechanics might work if the vanes constructed from tungsten, ordinary materials do not routinely produce positrons. We thank Dr. Lester Hulett for inviting us to a demonstration where he proved this to us first hand. Dr. Hulett is one of the foremost authorities on positrons who worked at Oak Ridge National Laboratory.

[151] Stephen C. Lowry, Alan Fitzsimmons, Petr Pravec, David Vokrouhlick, Hermann Boehnhardt, Patrick A. Taylor, Adrian Galád, Mike Irwin, Jonathan Irwin, Peter Kusnirák, Direct Detection of the Asteroidal YORP Effect (Science DOI: 10.1126/science.1139040, Published Online, March 8, 2007)

[152] Robert D. Schroll, Régis Wunenburger, Alexis Casner, Wendy W. Zhang, and Jean-Pierre Delville, Liquid Transport due to Light Scattering (Phys. Rev. Lett, American Physical Society, 2007) vol. 98, num. 133601

Nuclear Binding Energy

The phrase "nuclear binding energy" actually refers to the amount of work required to disassemble or assemble a nucleus. The protons and neutrons bind together via the strong force. Work results when the strong force moves onta and the Aether a distance, such as occurs in nuclear binding and unbinding processes.

The Aether Physics Model is agreeable with the mechanism of atomic energy release as explained in the Standard Model when it comes to the *mechanics* of fission and fusion reactions. That is, the total number of nucleons must be the same both before and after the reaction. Protons can capture electrons to produce neutrons, and neutrons can release electrons to produce protons.

The method for understanding the release of energy, however, is different in the Aether Physics Model. The Standard Model of particle physics has a strange method for calculating binding energy. In the Standard Model, protons and neutrons are the constituents of the nucleus. The proton and neutron present as two manifestations of the same particle, called a nucleon[114]. The nucleons measure in an arbitrary unit called Atomic Mass Unit (AMU). The atomic mass unit defines as $1/12$ the mass of the Carbon 12 isotope. Except for carbon 12, the amu has nothing to do with any of the atomic isotopes. The amu is an arbitrarily averaged value for nucleons and has no one-to-one relationship to actual nucleons. Yet the Standard Model calculates the mass defect (binding energy) of an isotope by subtracting the measured mass of the nucleus from the total amu of the protons, neutrons, *and* electrons. In the APM, the electrons have nothing whatsoever to do with the nuclear binding.

In the Standard Model, the difference between the measured mass of the atom and the sum of the masses of its parts is called the "mass defect" (Δm), which can be calculated using Equation (10.47). [153]

$$\Delta m = \left[Z\left(m_p + m_e\right) + \left(A - Z\right) m_n \right] - m_{atom} \tag{10.47}$$

where:

Δm = mass defect $\left(amu\right)$
m_p = mass of a proton $\left(1.007277 amu\right)$
m_n = mass of a neutron $\left(1.008665 amu\right)$
m_e = mass of an electron $\left(0.000548597 amu\right)$
m_{atom} = mass of nuclide ${}^{A}_{Z}X\,(amu)$
Z = atomic number (number of protons)
A = mass number (number of nucleons)

[153] *Atomic and Nuclear Physics DOE-HDBK-1019/1-93 MASS DEFECT AND BINDING ENERGY p17*

In other words, the above equation is fictional. There is no physical basis for subtracting a nucleus value, consisting only of the proton and neutron masses, from a total mass including the mass of the electrons.

The idea that there is a "mass defect," and that this mass defect is proof of Einstein's mass-energy equivalence formula, $E = mc^2$, is a trick resulting from the choice of arbitrary calculation techniques. However, when one looks at the history of nuclear physics[154], the choice is forgivable. During World War II, scientists were under enormous pressure to succeed in the development of a nuclear bomb, and any kind of equation that could get ballpark results would do. Nevertheless, the pressures of former times are not an excuse to settle for less than accurate descriptions and quantifications in quantum physics today.

Concerning the energy released during fission and fusion processes, scientists admit that energy releases in both fission and fusion, but they do not explain the paradoxes that arise from their theories.

> If we were able to fuse together or synthesize two neutrons and two protons to form an alpha particle, the resulting nucleus would actually be lighter than the total mass of the original nucleons. In this fusion process, mass would be lost.
>
> Actually, the mass lost is radiated in the form of energy and this is equal to the binding energy that holds the nucleons together in the helium nucleus. Conversely, if a means were available to disintegrate an alpha particle into two neutrons and two protons, it is clear that 28MeV of energy would be required for the reaction.[155]

The last statement is ambiguous, consistent with the method of the Standard Model. The authors of the above quote take care to avoid clearly stating that the energy radiates during fission as well[156]. In fission reactions, such as that for uranium 235, it is well understood that energy is radiated, not absorbed. The Standard Model claims that nuclear reactions of both the fission and fusion varieties radiate energy, although fusion releases more energy than fission[157].

In the fusion reaction, the resulting nucleus is lighter than the sum of its components, presumably because some of the mass radiates away as

---

[154] Gerard H. Clarfield and William M. Wiecek, Nuclear America: Military and Civilian Nuclear Power in the United States, 1940-1980, 1st ed. (New York: Harper & Row, 1984)

[155] Lapp, R.E. PhD and Andrews, H.L. PhD, Nuclear Radiation Physics, Prentice Hall, New York 1948 p.141

[156] Fission - A nuclear reaction in which an atomic nucleus, especially a heavy nucleus such as an isotope of uranium, splits into fragments, usually two fragments of comparable mass, releasing from 100 million to several hundred million electron volts of energy. The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

[157] "The energy released during fusion is even greater than that released during fission." "Nuclear Energy ," The Columbia Encyclopedia , 6th ed.

energy. If this were true, then one or more of the subatomic particles would no longer be quantum and would have a different mass and angular momentum than it had as part of the nucleus. Energy is also radiated when the nucleus is split, meaning that more mass from the subatomic particles is lost (if we are to believe that energy is equivalent to mass). However, what would be the explanation for this mass loss, if the atom were already deficient in mass?

If there is truly a conservation of energy and mass, then it should cost almost twice the fusion binding energy to separate the helium nucleus in a fission process. This is because some of the subatomic mass was already lost during the fusion process (the mass lost during fusion must be replaced to conserve angular momentum, mass, and energy in the subatomic particles). However, the data shows that there is net energy radiating from both fission and fusion processes; and the Standard Model theory clearly claims that the "binding energy" for both is positive.

In the Aether Physics Model, onta bind to each other when Aether folds. Each independent Aether unit has a spin position available for a proton and an anti-proton. When the proton spin position is full, the anti-proton spin position is not. The anti-proton spin position is equivalent to a proton spin position in another Aether unit at 180 degrees. When two protons come close enough, their Aether units fold over each other in such a way that each proton fills the anti-proton spin position of the other proton.

The same mechanism holds true for the neutron. Since the neutron is essentially a proton, except with a bound electron, it shares the same mechanics.

The proton and neutron have slightly different angular momenta. This tends to cause protons to join only with protons, and neutrons to join only with neutrons, through folded Aether units. Thus, both protons and neutrons generate the same "magic number" patterns independently of each other in various isotope configurations.

A proton and neutron can bind via electromagnetic charge (strong force) by adjoining their magnetic orientations. The neutron, having a neutralized electrostatic charge, assists the adjoining process.

The pattern of binding takes the exact form identified by Linus Pauling in his Spheron Model of atomic structure.

The Aether Physics Model presents an alternative view to the Standard Model regarding "binding energy." The "binding energy" equation writes:

$$k_c \frac{Z \cdot e_{pmax}{}^2 + N \cdot e_{nmax}{}^2}{\lambda_C} \phi = BND \tag{10.48}$$

where Z is the total number of protons and N are the total number of neutrons in the isotope. ϕ is a variation in the quantum distance between Aether units. The folding of Aether causes this variation.

The variation of distance times the binding force is the source of energy when a subatomic binding or unbinding occurs. Equation (10.49) shows the binding force times the variation of distance due to the Aether folding.

$$k_c \frac{Z \cdot e_{pmax}{}^2 + N \cdot e_{nmax}{}^2}{\lambda_C{}^2} \phi\lambda_C = BND \tag{10.49}$$

The empirical range of ϕ is from .092 (hydrogen 5) to about 1.479 (nickel 62).

In the fusion or the fission reactions, the distance between Aether units changes relative to the quantum length, the onta binding force moves, thus work occurs. The Gforce within the Aether units is the source of the "binding energy" when atomic nuclei compress or expand the Aether.

Again, Coulomb's constant applies instead of the *rmfd* constant in the nuclear binding energy equation. It would appear that the net effect of bound nuclei strong charges causes the onta to behave as spherical entities. Equation (10.49) appears to represent the turning point, where primary angular momentum forms what begins to appear as the physical Universe, since atoms are the first level of physical matter. This is because the two dimensional surface areas of the onta now have a third dimension of length (distance from each other) by way of binding. These three length dimensions are at right angles to each other, thus forming a volume with a more or less spherical structure.

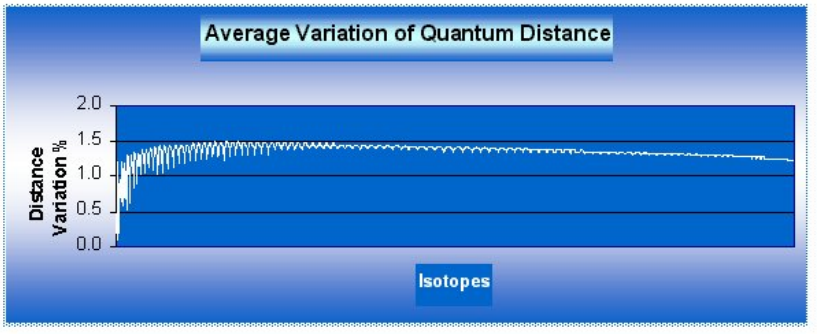
In equation (10.48), the binding energy per nucleon varies considerably. The maximum binding energies per nucleon tend to coincide with the more stable atomic isotopes. In the Standard Model, this means that it would take more energy per nucleon to separate a stable isotope such as iron 56 than it would a less stable or weaker isotope such as deuterium[158].

In equation (10.49) the binding energy per nucleon varies with average variation of quantum distance between Aether units. In the case of deuterium (hydrogen 2) the average variation of quantum distance between onta is equal to $0.187\lambda_C$.

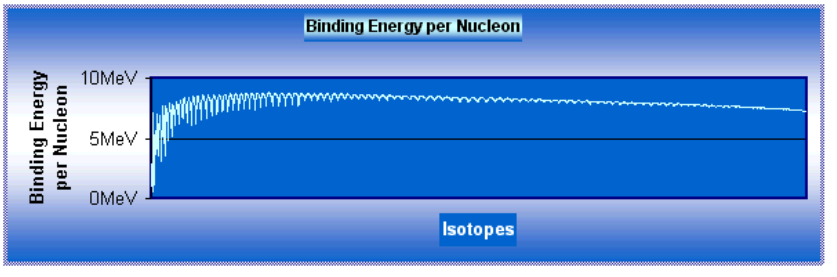
[158] "This energy is called the binding energy of the nuclide, and is a direct measure of nuclear stability." Stephenson, Richard Introduction to Nuclear Engineering, McGraw-Hill Book Company, Inc. 1954 p13

$$\frac{BE}{BF} = \frac{2.225MeV}{.785newton} = .187\lambda_C \tag{10.50}$$

where BE is the empirical binding energy of the isotope and BF is the calculated binding force. The average variation the force moves expresses in terms of the quantum distance. It turns out that after about the oxygen isotopes, the distance the strong forces move per nucleon (produced by Aether units) remains between 1 Compton wavelength and 1.5 Compton wavelengths, as shown in the graph below.



The graph of the internal nuclear lengths looks familiar. In fact, the internal nuclear lengths of the isotopes are very similar to those shown in the graph of the isotope binding energies per nucleon, as seen below.



Electron Binding Energy

Scientists have attempted to quantify the electron binding energies of atoms. Lindgren[159] reports on probabilistic methods for deriving the electron binding energies using the Koopmans Theorem, ΔSCF, many-body perturbation (MBPT), Coupled-Cluster Approach (CCA), Greene's function, and the density functional theory (DFT) approach. Whitney[160] [161] uses a new two-step variant of special relativity theory to uncover an underlying similarity between all elements and Hydrogen, and algebraically characterizes all variations from that norm. The present work results directly in an accurate binding energy equation predicting for

[159] Lindgren, Ingvar, *Calculation of Electron Binding Energies and Affinities* (Phys. Scr. T120 15-18, doi:10.1088/0031-8949/2005/T120/002, 2005)

[160] Whitney, Cynthia, *Algebraic Chemistry: Parts I Through V* (Hadronic Journal, vol. 29, no. 1, February 2006) pp 1-46

[161] Whitney, Cynthia, *Algebraic Chemistry Based on a PIRT* (Physical Interpretations of Relativity Theory conference, London, UK, 2006)

all ground state electrons.

Up to now, the Aether Physics Model only quantified quantum *structure*, as opposed to quantum *mechanics*. Despite the properly quantified Unified Force Theory contained within the Aether Physics Model, the model has not yet received significant attention from physicists and mathematicians. This lack of interest is partly due to the necessity of learning revised definitions for the dimensions, understanding that electrical units should always be expressed in dimensions of distributed charge (charge squared), and understanding the two distinctly different manifestations of charges. Further, the Aether Physics Model is a paradigm of Aether/angular momentum, as opposed to the mass/energy paradigm presently in use.

Meaning of Kinetic Energy

All energy transactions occur in two parts. There is the source of the energy and there is the receiver of the energy. To put it in common language, there is cause and effect. Whether an electron is seen being acted upon, or doing the acting, it is only half the energy transaction. Therefore, the binding energy equation will represent only half the energy transaction.

Toroidal Structure of the Electron

While researching the evidence for electron radii, we came upon the research of David McCutcheon and his Ultrawave Theory[162], which gave an interesting view of the classical and Bohr electron radii:

$$2\pi r_e \cdot 2\pi\alpha_0 = \lambda_C{}^2 \tag{10.51}$$

It is likely others have noticed this relationship, but such work was not located. The above relationship reveals that a toroid with a minor radius equal to the classical electron radius and major radius equal to the Bohr radius has the surface area equal to the Compton wavelength squared.

Further, Planck's constant easily demonstrates the quantum of action (for the electron) is equal to the mass of the electron times the Compton wavelength squared times the quantum frequency.

$$h = m_e \cdot \lambda_C{}^2 \cdot F_q \tag{10.52}$$

We used the above quantum analyses in developing the Aether Physics Model. It turns out the electron models as a toroid, which can have variable radii as long as the quantum surface area remains the same. Therefore, the electron is not a fixed-point particle, but is a flexible toroidal entity. The flexibility is possible due to the Aether, which gives the electron its structure. Ontologically, the Aether unit pre-exists matter and contributes to the material structure of the angular momentum encapsulated by it.

[162] Web site formerly located at http://davidmac_no1.tripod.com/ut_part1/, archived at http://web.archive.org/web/20040923070747/http:/davidmac_no1.tripod.com/.

Hydrogen Binding Energy

Because of the relationship between the classical and Bohr electron radii, the proportion of the two is equal to the electron fine structure constant squared.

$$\frac{r_e}{\alpha_0} = \alpha^2 \tag{10.53}$$

An equation, once posted on a Vanderbilt University philosophy page[163], and by David McCutcheon, expressed the hydrogen 1s (ground state) orbital electron in terms of the electron fine structure and kinetic energy of the electron:

$$H_{1s} = \alpha^2 \frac{m_e \cdot c^2}{2} = 13.606eV \tag{10.54}$$

In the Aether Physics Model, this would interpret as the ground state, unbound ratio of the electron radii times the strong force of the electron at the range of one quantum length:

$$H_{1s} = \frac{r_e}{\alpha_0} A_u \frac{{e_{emax}}^2}{2\lambda_C} = 13.606eV \tag{10.55}$$

(Electron volts express energy above, although the same value written in quantum measurement units is $2.663 \times 10^{-5} enrg$.)

Helium Binding Energy

Due to the nature of curved Aether, when multiplying charges the square root of each charge is used. If there are two electron strong charges involved, then the strong force between them is equal to:

$$A_u \frac{2e_{emax} \cdot 2e_{emax}}{{\lambda_C}^2} = F \tag{10.56}$$

We could similarly calculate the kinetic energy as:

$$A_u \frac{2e_{emax} \cdot 2e_{emax}}{2\lambda_C} = E_k \tag{10.57}$$

In the section about Aether Structures (page 67), the Aether structure building steps involve quantifying the spin differences of matter and Aether. Although the quantum Aether unit has 2-spin, subatomic particles only inhabit one fourth of the Aether, or half spin.

The "spin" of the subatomic particles is a direct result of the two dynamic frequency dimensions of the Aether. One of the dynamic frequency

[163] Inactive page: http://ransom.isis.vanderbilt.edu/philosophy/FineStructureConstant.htm

dimensions manifests as forward/backward time, the other manifests as right/left spin direction. There is actually a third "static" frequency, which results in positive/negative electrostatic charge.

All matter in our observed Universe exists in only the forward time direction. This observed matter further divides into matter and antimatter, depending on which half of the spin *direction* cycle it exists. Matter also divides into positive and negative charge depending on which half of the static charge cycle it exists.

The primary angular momentum composing subatomic particles can only spin in either the forward or backward time direction, and either the right or left spin direction, and exist in either the positive or the negative of the static charge dipole. Since static charge is not part of the dynamic two-spin structure of the Aether, and angular momentum only exists in half the forward/backward time frequency and half the right/left spin direction, matter appears to have half-spin.

Therefore, when half spin subatomic particles bind they are missing the backward time direction, yet the Aether sees this backward time direction. The result is that subatomic particles do not pair exactly opposite or adjacent to each other, as square building blocks seem to do at the macro level of existence. Instead, the subatomic particles (being curved toroidal structures to begin with), build up in a twisted pattern.

This twisted construction affects the minor and major radii of the toroidal electrons. As electrons bind to each other and fill the Aether spin positions around an atomic nucleus, the effect is additive.

In the case of the 1s orbital electrons, the minor radius decreases with the total number of electrons (which is equal to the number of protons in a neutral atom). Designating the number of protons as Z, the minor radius decreases in steps of half spin.

$$\frac{\sqrt{Z^2+1}-1}{2} \tag{10.58}$$

The major radius increases in steps of half spin:

$$\frac{\sqrt{Z^2+1}+1}{2} \tag{10.59}$$

The above stepping patterns are the phi and Phi numbers. In the case of the first binding, where there are two electrons, we get:

$$\frac{\sqrt{2^2+1}-1}{2} = phi = .618...$$
$$\frac{\sqrt{2^2+1}+1}{2} = Phi = 1.618... \tag{10.60}$$

The above numbers are the Golden Ratio (Phi) and its reciprocal (phi).

With the increase in the number of protons in the atoms, there is an increase in the number of electrons. The total electron radii deform accordingly. As the minor radius shrinks and the major radius grows, there is a deformation as the Aether units stretch and thus the distance between them shrinks. The distance empirically induces in terms of the quantum length as (the nth root is a capital Z squared):

$$\frac{\lambda_C}{\sqrt[Z^2]{2}} \tag{10.61}$$

There is no electron strong force binding in the neutral hydrogen atom because there is only one electron, but when we look at helium and all other neutral atoms, the electron binding energy equation for the 1s "orbital" electron becomes:

$$Z_{1s} = \frac{r_e \frac{\sqrt{Z^2+1}-1}{2}}{\alpha_0 \frac{\sqrt{Z^2+1}+1}{2}} A_u \frac{Z \cdot e_{emax} \cdot Z \cdot e_{emax} \cdot \sqrt[Z^2]{2}}{2\lambda_C} \tag{10.62}$$

In the case of the neutral helium atom, we can calculate the 1s orbital electron binding energies as:

$$He_{1s} = \frac{r_e \frac{\sqrt{2^2+1}-1}{2}}{\alpha_0 \frac{\sqrt{2^2+1}+1}{2}} A_u \frac{2 \cdot e_{emax} \cdot 2 \cdot e_{emax} \cdot \sqrt[2^2]{2}}{2\lambda_C} = 24.721eV \tag{10.63}$$

The empirically measured 1s orbital electron binding energy for helium is 24.6eV.

Other Binding Energies

As the bindings continue into complexity, it is clear another factor comes into play, which does not yet properly quantify. The elements lithium through neon comprises the second orbital layer around the nucleus. It may just be coincidence, but these eight out of the first ten elements calculate to eight tenths of their measured values. From sodium to uranium, the calculation variations are linear with respect to the measured electron binding energies indicating a simple physical explanation.

When a linear adjustment applies to the equation, the calculations are remarkably close to the measured values:

$$Z_{1s} = \frac{r_e \dfrac{\sqrt{Z^2+1}-1}{2}}{\alpha_0 \dfrac{\sqrt{Z^2+1}+1}{2}} A_u \frac{Z \cdot e_{emax} \cdot Z \cdot e_{emax} \cdot \sqrt[Z^2]{2} \cdot (.757 + .0028Z)}{2\lambda_C} \qquad (10.64)$$

The above equation may be simplified, but it remains in its present form to remind the reader of its physical interpretation. The empirical data used to derive the above equations draws from Gwyn Williams'[164] compilation of electron binding energies. Table 2 shows the measured and calculated 1s orbital binding energies in eV per atomic element and the deviation between them based upon equation (10.64). Figure 1 depicts the deviation of the calculations from the empirically measured electron binding energies of the 1s orbital position for each element for equation (10.64).

Table 3 lists the measured 1s orbital binding energies in eV per atomic element in comparison to the calculations of equation (10.62) (without the linear adjustment). Figure 2 shows the deviation of the unadjusted (10.62) calculations from the empirical electron binding energies of the 1s orbital positions for each atomic element. The unadjusted data presents for those interested in discovering the final physical component of the 1s orbital binding energy equation.

[164] Williams, Gwyn http://xray.uu.se/hypertext/EBindEnergies.html Values are taken from J. A. Bearden and A. F. Burr, "Reevaluation of X-Ray Atomic Energy Levels," Rev. Mod. Phys. 39, (1967) p.125, except values marked '*' are from M. Cardona and L. Ley, Eds., Photoemission in Solids I: General Principles (Springer-Verlag, Berlin, 1978) with additional corrections, and values marked with '+' are from J. C. Fuggle and N. Mårtensson, "Core-Level Binding Energies in Metals," J. Electron Spectrosc. Relat. Phenom. 21, (1980) p.275. [reference copied from web page]

Table 2 – Empirical and Calculated Binding Energies with Errors [equation **(10.64)**]

Z	Element	Measured	Calculated	Deviation	Z	Element	Measured	Calculated	Deviation
3	Li	54.7	68.71	4.02%	48	Cd	26711	30077.29	-0.37%
4	Be	111.5	138.58	4.74%	49	In	27940	31369.85	-0.40%
5	B	188	235.03	3.75%	50	Sn	29200	32689.61	-0.42%
6	C	284.2	358.33	2.50%	51	Sb	30491	34036.58	-0.44%
7	N	409.9	508.62	3.77%	52	Te	31814	35410.77	-0.46%
8	O	543.1	685.98	1.58%	53	I	33169	36812.16	-0.48%
9	F	696.7	890.45	0.03%	54	Xe	34561	38240.77	-0.49%
10	Ne	870.2	1122.06	-1.21%	55	Cs	35985	39696.59	-0.49%
11	Na	1070.8	1380.83	-1.56%	56	Ba	37441	41179.61	-0.50%
12	Mg	1303	1666.76	-1.12%	57	La	38925	42689.85	-0.52%
13	Al	1559	1979.88	-0.75%	58	Ce	40443	44227.30	-0.54%
14	Si	1839	2320.18	-0.45%	59	Pr	41991	45791.96	-0.56%
15	P	2145.5	2687.68	-0.09%	60	Nd	43569	47383.84	-0.60%
16	S	2472	3082.37	0.02%	61	Pm	45184	49002.92	-0.62%
17	Cl	2822	3504.25	0.09%	62	Sm	46834	50649.21	-0.64%
18	Ar	3205.9	3953.34	0.44%	63	Eu	48519	52322.72	-0.65%
19	K	3608.4	4429.62	0.54%	64	Gd	50239	54023.44	-0.67%
20	Ca	4038.5	4933.11	0.70%	65	Tb	51996	55751.36	-0.68%
21	Sc	4492	5463.81	0.78%	66	Dy	53789	57506.50	-0.68%
22	Ti	4966	6021.71	0.74%	67	Ho	55618	59288.85	-0.69%
23	V	5465	6606.81	0.70%	68	Er	57486	61098.41	-0.69%
24	Cr	5989	7219.12	0.66%	69	Tm	59390	62935.19	-0.69%
25	Mn	6539	7858.64	0.61%	70	Yb	61332	64799.17	-0.68%
26	Fe	7112	8525.36	0.53%	71	Lu	63314	66690.36	-0.67%
27	Co	7709	9219.30	0.43%	72	Hf	65351	68608.77	-0.63%
28	Ni	8333	9940.44	0.35%	73	Ta	67416	70554.39	-0.61%
29	Cu	8979	10688.79	0.22%	74	W	69525	72527.21	-0.58%
30	Zn	9659	11464.35	0.18%	75	Re	71676	74527.25	-0.54%
31	Ga	10367	12267.11	0.15%	76	Os	73871	76554.50	-0.50%
32	Ge	11103	13097.09	0.14%	77	Ir	76111	78608.97	-0.45%
33	As	11867	13954.28	0.12%	78	Pt	78395	80690.64	-0.39%
34	Se	12658	14838.67	0.10%	79	Au	80725	82799.52	-0.33%
35	Br	13474	15750.28	0.06%	80	Hg	83102	84935.62	-0.26%
36	Kr	14326	16689.10	0.07%	81	Tl	85530	87098.92	-0.18%
37	Rb	15200	17655.12	0.04%	82	Pb	88005	89289.44	-0.10%
38	Sr	16105	18648.36	0.02%	83	Bi	90526	91507.17	-0.01%
39	Y	17038	19668.80	0.01%	84	Po	93105	93752.11	0.09%
40	Zr	17998	20716.46	-0.03%	85	At	95730	96024.26	0.19%
41	Nb	18986	21791.33	-0.06%	86	Rn	98404	98323.62	0.30%
42	Mo	20000	22893.41	-0.11%	87	Fr	101137	100650.20	0.42%
43	Tc	21044	24022.69	-0.16%	88	Ra	103922	103003.98	0.55%
44	Ru	22117	25179.19	-0.21%	89	Ac	106755	105384.98	0.68%
45	Rh	23220	26362.90	-0.25%	90	Th	109651	107793.19	0.82%
46	Pd	24350	27573.82	-0.31%	91	Pa	112601	110228.60	0.96%
47	Ag	25514	28811.95	-0.34%	92	U	115606	112691.23	1.11%

Values calculated in Microsoft Excel

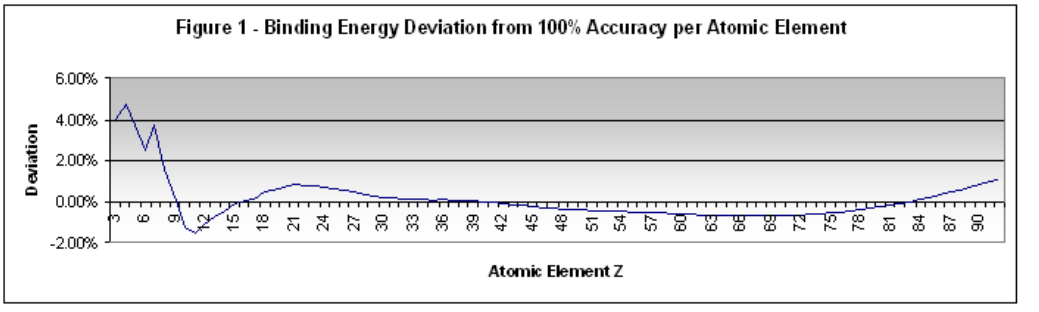
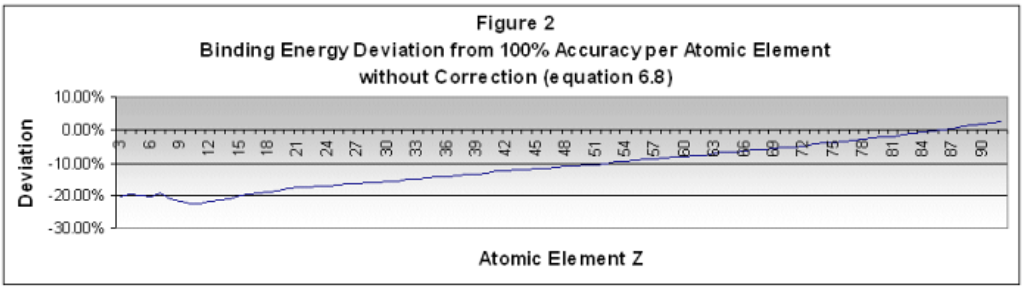


Table 3 - Empirical and Calculated Binding Energies with Errors [equation (10.62)] via MS Excel

Z	Element	Measured	Calculated	Deviation	Z	Element	Measured	Calculated	Deviation
3	Li	54.7	68.71	-20.38%	48	Cd	26711	30077.29	-11.19%
4	Be	111.5	138.58	-19.54%	49	In	27940	31369.85	-10.93%
5	B	188	235.03	-20.01%	50	Sn	29200	32689.61	-10.67%
6	C	284.2	358.33	-20.69%	51	Sb	30491	34036.58	-10.42%
7	N	409.9	508.62	-19.41%	52	Te	31814	35410.77	-10.16%
8	O	543.1	685.98	-20.83%	53	I	33169	36812.16	-9.90%
9	F	696.7	890.45	-21.76%	54	Xe	34561	38240.77	-9.62%
10	Ne	870.2	1122.06	-22.45%	55	Cs	35985	39696.59	-9.35%
11	Na	1070.8	1380.83	-22.45%	56	Ba	37441	41179.61	-9.08%
12	Mg	1303	1666.76	-21.82%	57	La	38925	42689.85	-8.82%
13	Al	1559	1979.88	-21.26%	58	Ce	40443	44227.30	-8.56%
14	Si	1839	2320.18	-20.74%	59	Pr	41991	45791.96	-8.30%
15	P	2145.5	2687.68	-20.17%	60	Nd	43569	47383.84	-8.05%
16	S	2472	3082.37	-19.80%	61	Pm	45184	49002.92	-7.79%
17	Cl	2822	3504.25	-19.47%	62	Sm	46834	50649.21	-7.53%
18	Ar	3205.9	3953.34	-18.91%	63	Eu	48519	52322.72	-7.27%
19	K	3608.4	4429.62	-18.54%	64	Gd	50239	54023.44	-7.01%
20	Ca	4038.5	4933.11	-18.13%	65	Tb	51996	55751.36	-6.74%
21	Sc	4492	5463.81	-17.79%	66	Dy	53789	57506.50	-6.46%
22	Ti	4966	6021.71	-17.53%	67	Ho	55618	59288.85	-6.19%
23	V	5465	6606.81	-17.28%	68	Er	57486	61098.41	-5.91%
24	Cr	5989	7219.12	-17.04%	69	Tm	59390	62935.19	-5.63%
25	Mn	6539	7858.64	-16.79%	70	Yb	61332	64799.17	-5.35%
26	Fe	7112	8525.36	-16.58%	71	Lu	63314	66690.36	-5.06%
27	Co	7709	9219.30	-16.38%	72	Hf	65351	68608.77	-4.75%
28	Ni	8333	9940.44	-16.17%	73	Ta	67416	70554.39	-4.45%
29	Cu	8979	10688.79	-16.00%	74	W	69525	72527.21	-4.14%
30	Zn	9659	11464.35	-15.75%	75	Re	71676	74527.25	-3.83%
31	Ga	10367	12267.11	-15.49%	76	Os	73871	76554.50	-3.51%
32	Ge	11103	13097.09	-15.23%	77	Ir	76111	78608.97	-3.18%
33	As	11867	13954.28	-14.96%	78	Pt	78395	80690.64	-2.84%
34	Se	12658	14838.67	-14.70%	79	Au	80725	82799.52	-2.51%
35	Br	13474	15750.28	-14.45%	80	Hg	83102	84935.62	-2.16%
36	Kr	14326	16689.10	-14.16%	81	Tl	85530	87098.92	-1.80%
37	Rb	15200	17655.12	-13.91%	82	Pb	88005	89289.44	-1.44%
38	Sr	16105	18648.36	-13.64%	83	Bi	90526	91507.17	-1.07%
39	Y	17038	19668.80	-13.38%	84	Po	93105	93752.11	-0.69%
40	Zr	17998	20716.46	-13.12%	85	At	95730	96024.26	-0.31%
41	Nb	18986	21791.33	-12.87%	86	Rn	98404	98323.62	0.08%
42	Mo	20000	22893.41	-12.64%	87	Fr	101137	100650.20	0.48%
43	Tc	21044	24022.69	-12.40%	88	Ra	103922	103003.98	0.89%
44	Ru	22117	25179.19	-12.16%	89	Ac	106755	105384.98	1.30%
45	Rh	23220	26362.90	-11.92%	90	Th	109651	107793.19	1.72%
46	Pd	24350	27573.82	-11.69%	91	Pa	112601	110228.60	2.15%
47	Ag	25514	28811.95	-11.45%	92	U	115606	112691.23	2.59%



Sample Detailed Calculations

We can apply equation (10.64) to any element from lithium to uranium.

OXYGEN

Calculating the 1s orbital for oxygen we get $534.534eV$ (all values are off from table due to rounding):

$$O_{1s} = \frac{r_e \frac{\sqrt{8^2+1}-1}{2}}{\alpha_0 \frac{\sqrt{8^2+1}+1}{2}} A_u \frac{8 \cdot e_{emax} \cdot 8 \cdot e_{emax} \cdot \sqrt[8^2]{2} \cdot (.757 + .0028 \cdot 8)}{2\lambda_C}$$

$$O_{1s} = \frac{2.818 \times 10^{-15} m \cdot 3.531}{5.292 \times 10^{-11} m \cdot 4.531} 1.419 \times 10^{12} \frac{kg \cdot m^3}{sec^2 \cdot coul^2} \frac{64 \cdot 1.400 \times 10^{-37} coul^2 \cdot 1.011 \cdot .779}{2 \cdot 2.426 \times 10^{-12} m}$$

$$O_{1s} = 4.150 \times 10^{-5} \cdot 1.419 \times 10^{12} \frac{kg \cdot m^3}{sec^2 \cdot coul^2} \frac{7.055 \times 10^{-36} coul^2}{4.852 \times 10^{-12} m}$$

$$O_{1s} = 8.564 \times 10^{-17}\ joule = 534.534eV$$

IRON

The ground state electron for iron is similarly calculated:

$$Fe_{1s} = \frac{r_e \frac{\sqrt{26^2+1}-1}{2}}{\alpha_0 \frac{\sqrt{26^2+1}+1}{2}} A_u \frac{26 \cdot e_{emax} \cdot 26 \cdot e_{emax} \cdot \sqrt[26^2]{2} \cdot (.757 + .0028 \cdot 26)}{2\lambda_C}$$

$$Fe_{1s} = \frac{2.818 \times 10^{-15} m \cdot 12.510}{5.292 \times 10^{-11} m \cdot 13.510} 1.419 \times 10^{12} \frac{kg \cdot m^3}{sec^2 \cdot coul^2} \frac{676 \cdot 1.400 \times 10^{-37} coul^2 \cdot 1.001 \cdot .830}{2 \cdot 2.426 \times 10^{-12} m}$$

$$Fe_{1s} = 4.931 \times 10^{-5} \cdot 1.419 \times 10^{12} \frac{kg \cdot m^3}{sec^2 \cdot coul^2} \frac{7.861 \times 10^{-35} coul^2}{4.852 \times 10^{-12} m}$$

$$Fe_{1s} = 1.134 \times 10^{-15}\ joule = 7.077 \times 10^3 eV$$

URANIUM

The calculation for uranium is:

$$U_{1s} = \frac{r_e \frac{\sqrt{92^2+1}-1}{2}}{\alpha_0 \frac{\sqrt{92^2+1}+1}{2}} A_u \frac{92 \cdot e_{emax} \cdot 92 \cdot e_{emax} \cdot \sqrt[92^2]{2} \cdot (.757 + .0028 \cdot 92)}{2\lambda_C}$$

$$U_{1s} = \frac{2.818 \times 10^{-15} m \cdot 45.503}{5.292 \times 10^{-11} m \cdot 46.503} 1.419 \times 10^{12} \frac{kg \cdot m^3}{sec^2 \cdot coul^2} \frac{8.464 \times 10^3 \cdot 1.400 \times 10^{-37} coul^2 \cdot 1.000 \cdot 1.015}{2 \cdot 2.426 \times 10^{-12} m}$$

$$U_{1s} = 5.211\times10^{-5}\cdot1.419\times10^{12}\,\frac{kg\cdot m^3}{sec^2\cdot coul^2}\,\frac{1.202\times10^{-33}coul^2}{4.852\times10^{-12}m}$$

$$U_{1s} = 1.832\times10^{-14}\,joule = 1.144\times10^{5}eV$$

Conclusion

The Aether Physics Model electron binding energy equations for the 1s orbitals are not exact, but very close, especially considering that all the elemental ground states are calculated from first principles. There is the possibility the data could be faulty, however it is more likely there are aspects of the Aether structure, which the equation is not yet addressing. These aspects may surface as future modifications to the equation.

The electron binding energy equation is the first unique quantum mechanical expression of the Aether Physics Model and demonstrates the model is viable. Unlike the quantum mechanics of the mass/energy paradigm, the Aether Physics Model is discrete and devoid of probability functions and paradoxes, which should make it superior to the Standard Model when fully developed.

Now that the Aether Physics Model quantifies the quantum structure and we have produced our first set of equations, the analysis must develop further until it explains all aspects of the atom. We should then be able to quantify the structural aspects of associated molecules. We also need to quantify and explore the mechanics of light very thoroughly.

Acknowledgement

We thank Dr. Cynthia Whitney of Galilean Electrodynamics[165] for providing references and background information on prior electron energy binding equation research. We also thank Dr. Gerald Hooper of Leicester, UK and Dr. Phil Risby of DES Group, UK for their guidance on this subject.

Addendum

Richard Merrick, who mathematically analyzes the harmonics of sound, suggested the missing parameter in the electron binding energy equation and also the subatomic g-factors might be due to harmonics. We discussed the possibility that the missing parameter might be similar to the Pythagorean comma meantone. Depending upon the reference, the Pythagorean comma meantone is a small variation of frequency between the harmonic derived from a progression of fifths and the harmonic, which is twice the original frequency. Richard also pointed out the *Phi* twist portion of the electron binding energy equation (10.60) is equal to:

[165] http://www.galileanelectrodynamics.com/

$$\frac{\frac{\sqrt{Z^2+1}-1}{2}}{\frac{\sqrt{Z^2+1}+1}{2}} = \frac{Z(last)}{Z(next)} \tag{10.65}$$

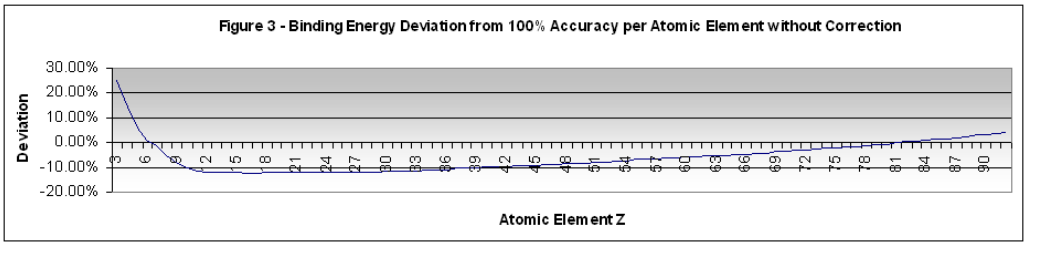
In an attempt to capture the "comma," the value of $Z(current)$ per $Z(last)$ was found effective:

$$\frac{Z(current)}{Z(last)} = comma \tag{10.66}$$

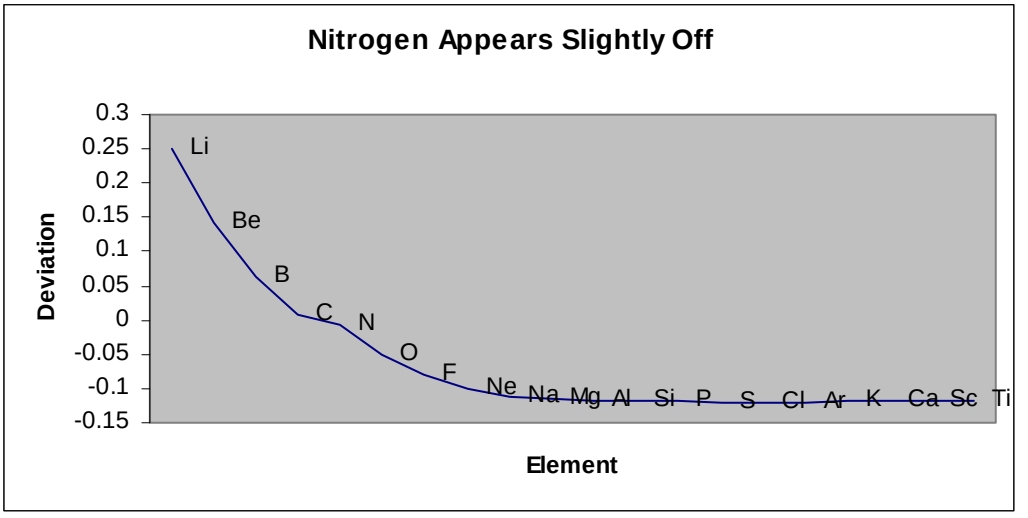
Due to the distributed nature of quantum structure, it was noted that the *Phi* twist and comma would also be distributed. This resulted in the following electron binding energy equation:

$$Z_{1s} = \frac{r_e\left(\frac{\sqrt{Z^2+1}-1}{2}\right)^2}{\alpha_0\left(\frac{\sqrt{Z^2+1}+1}{2}\right)^2} A_u \frac{Z^2 \cdot {e_{emax}}^2 \cdot \sqrt[Z^2]{2}}{2\lambda_C} \cdot \left(\frac{Z}{Z-1}\right)^2 \tag{10.67}$$

Equation (10.67) is considerably more accurate than equation (10.63) for elements lithium through uranium. More important, equation (10.67) provides a smooth curve for all the elements, except nitrogen.



A closer view reveals nitrogen has a slightly erratic ground state binding energy compared to the rest of the values. Assuming the electron binding energy equation is close to representing the true ground state binding energies, then we can offset the empirical nitrogen ground state binding energy of 409.9 eV by 1.46%, which gives a nitrogen ground state binding energy of 403.9 eV.



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16	S	2472	2809.62	-12.02%	61	Pm	45184	47815.94	-5.50%
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21	Sc	4492	5090.31	-11.75%	66	Dy	53789	56217.60	-4.32%
22	Ti	4966	5627.99	-11.76%	67	Ho	55618	57979.56	-4.07%
23	V	5465	6192.86	-11.75%	68	Er	57486	59768.74	-3.82%
24	Cr	5989	6784.93	-11.73%	69	Tm	59390	61585.12	-3.56%
25	Mn	6539	7404.19	-11.69%	70	Yb	61332	63428.72	-3.31%
26	Fe	7112	8050.64	-11.66%	71	Lu	63314	65299.52	-3.04%
27	Co	7709	8724.30	-11.64%	72	Hf	65351	67197.54	-2.75%
28	Ni	8333	9425.15	-11.59%	73	Ta	67416	69122.76	-2.47%
29	Cu	8979	10153.20	-11.56%	74	W	69525	71075.20	-2.18%
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31	Ga	10367	11690.91	-11.32%	76	Os	73871	75061.71	-1.59%
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38	Sr	16105	17929.85	-10.18%	83	Bi	90526	89871.62	0.73%
39	Y	17038	18929.95	-9.99%	84	Po	93105	92096.16	1.10%
40	Zr	17998	19957.26	-9.82%	85	At	95730	94347.92	1.46%
41	Nb	18986	21011.77	-9.64%	86	Rn	98404	96626.89	1.84%
42	Mo	20000	22093.49	-9.48%	87	Fr	101137	98933.07	2.23%
43	Tc	21044	23202.42	-9.30%	88	Ra	103922	101266.46	2.62%
44	Ru	22117	24338.56	-9.13%	89	Ac	106755	103627.06	3.02%
45	Rh	23220	25501.91	-8.95%	90	Th	109651	106014.87	3.43%
46	Pd	24350	26692.47	-8.78%	91	Pa	112601	108429.89	3.85%
47	Ag	25514	27910.23	-8.59%	92	U	115606	110872.12	4.27%

We consulted Gwyn Williams to verify the calculated nitrogen ground state binding energy. In his reply, he stated:

> In Cardona and Ley's book[166] it's definitely 409.9. In Beardon and Burr, rev. Mod. Phys. 39, 125 (1967) it's given as 401.6 +- 0.4, and in a paper I have by Wolfgang Lotz, dated February 1970[167], and for which I can't find the reference, it's given as 403.

So even if the latest version of the electron binding energy equation is not quite finished, it may still have scientific value in verifying the empirical electron binding energies.

Energy from the Aether

Technically, it is not possible to get energy from the Aether. This is because energy is not onta. Only photons, electrons, and protons are onta that come from the Aether into the physical realm. Nevertheless, by generating onta, and putting the onta to work, then it is possible to produce "energy from the Aether."

In the Aether Physics Model, photons are onta with an inherent velocity. Photons convert to electrons through the photoelectric effect. Thus if a device is properly constructed to generate photons from dark matter, and if a circuit that converts photons to electrons is incorporated, a steady flow of electric current can be put into motion without the need for a battery or a dynamo.

Each unit of Aether is dynamic and independent of all other Aether units. The Aether has reciprocal angular momentum per charge (conductance), which can manipulate into producing the angular momentum of a photon via the Casimir effect. The method involves no sleight of hand math or invented concepts; this theory rests on empirical data.

The Casimir effect is widely considered to hold the key to the extraction of energy from the Aether. Taking the quantum case where the length L and area A have the Compton wavelength, the Casimir equation writes in terms of quantum measurements and units:

$$\begin{aligned} L &= \lambda_C \\ A &= {\lambda_C}^2 \\ \frac{\pi \cdot h \cdot c}{480 \cdot L^4} A &= 2.208 \times 10^{-4}\, newton \end{aligned} \tag{10.68}$$

The Planck constant h times the speed of light c produces the photon unit

[166] M. Cardona and L. Ley, Eds., *Photoemission in Solids I: General Principles* (Springer-Verlag, Berlin, 1978)

[167] Lotz Wolfgang, Electron Binding Energies in Free Atoms (J. Opt. Soc. Am., vol. 60, 1970) 206-210

in the Aether Physics Model. Expressing the force in $forc$ units we get:

$$\frac{\pi \cdot phtn \cdot \lambda_C{}^2}{480 \lambda_C{}^4} = 6.545 \times 10^{-3}\ forc \tag{10.69}$$

where $forc$ is equal to $0.034 newton$.

Hendrick Casimir derived equation (10.68) from empirical data. Steven Lamoreaux proved the Casimir equation correct within 5% in 1996. Therefore, there is a margin for adjusting the numerical part of the equation.

Notice that the number 480 appears in Casimir's equation. In the Aether Physics Model all quantum related equations depend on quantum measurements. Earlier it appeared that 4π and $16\pi^2$ have quantum dimension properties. When examining the $\frac{\pi}{480}$ component of equation (10.69) we note that it is very close to $\frac{1}{16\pi^2}$. Adjusting Casimir's equation accordingly, we get:

$$\frac{phtn \cdot \lambda_C{}^2}{16\pi^2 \cdot \lambda_C{}^4} = 6.333 \times 10^{-3}\ forc \tag{10.70}$$

Now we can cancel out the $16\pi^2$ terms:

$$\frac{phtn \cdot \lambda_C{}^2}{\lambda_C{}^4} = forc \tag{10.71}$$

The Casimir equation can also transform into the Coulomb expression for the electron strong charge. From equation (10.70) we can replace $\frac{phtn}{16\pi^2}$ with $e_{emax}{}^2 \cdot k_C$.

$$\frac{phtn}{16\pi^2} = e_{emax}{}^2 \cdot k_C \tag{10.72}$$

and ultimately produce the strong force law for the electron:

$$rmfd \frac{e_{emax} \cdot e_{emax}}{\lambda_C{}^2} = forc \tag{10.73}$$

where $rmfd$ is the quantum unit of the Aether and is equal to Coulomb's constant times $16\pi^2$. This form of the equation tells us that the Aether exerts a force between strong charges that is proportional to the distance between them squared. The strong force is dependent on

the strong charge.

So far, from the Casimir equation, we have shown that photons between plates can create force, and that photon-created force is identical to the strong charge created force. Therefore, it would follow that the Casimir effect is an example of the strong force law.

Capacitance defines as a unit using capacitor plates with quantum measurements:

$$capc = \varepsilon_0 \frac{{\lambda_C}^2}{\lambda_C} \tag{10.74}$$

where ε_0 is the permittivity constant, the capacitance between two plates is dependent on the Aether constant of permittivity, the common area of the plates, and the distance between the plates.

If we wanted to produce energy from the Aether, we would produce photons between strong charges. The ideal configuration would be strong charges arranged in a spherical form. Two spherical objects (of strong charge) held a certain distance apart produce a capacitance. The ratio of the spherically arranged strong charge to capacitance determines the amount of energy that results.

However, since electricity is a quantum process, with photons and electrons of a specific magnitude, the spherical objects must adhere to a specific design and position to produce a specific capacitance. When properly tuned, the Aether between the plates will resonate and generate photons, which can directly convert to electrons via the photoelectric effect.

The quantum unit of energy in the Aether Physics Model is $enrg$ and it is equal to:

$$enrg = rmfd \frac{{e_{emax}}^2}{\lambda_C} = m_e \cdot c^2 \tag{10.75}$$

If we want to know the energy available between two plates, we use this equation:

$$\frac{4\pi \cdot {e_{emax}}^2}{capc} = enrg \tag{10.76}$$

So equation (10.76) shows that the spherical constant times strong charge divided by the capacitance of the plates is equal to the energy produced. The strong charge is inherent to the electron; the capacitance is a function of the Aether. There is no input to this system designed to get energy, as the system draws on the inherent resonance in the quantum Aether unit

(*rmfd*). Thus, equation (10.76) shows how energy can tap from the Aether. Some call this Zero Point Energy.

The equation suggests that photons generate at a very specific frequency.

In order for energy to come from this system, there must be a dielectric between the strong charges. The dielectric can be "free space," but then the load placed across the plates must not short out the miniature capacitor. Due to the 4π spherical constant times the strong charge, it would seem that spherical capacitor plates would work better than flat capacitor plates. In actual experiments, there is some validation of this supposition. Perhaps a good experiment to test the Zero Point Energy hypothesis would be to use very fine spheroid aluminum particles suspended in a dielectric solution with a surfactant, and to arrange for a load to occur across the "plates."

A paper with similar theory is Lecture No. 27, Our Future Energy Source, The Vacuum, 2002 by Harold Aspden.

Expanding Universe

As a direct result of strong charges coming into proximity with each other within atoms and molecules in stars, photons create continually. This causes a constant stream of new primary angular momentum to flow into the Universe. Atoms continually absorb these new photons and convert them into electrons, positrons, and photons via the photoelectric effect, Compton Effect, and pair production. The same process likely occurs between protons and neutrons to produce some types of gamma rays.

Can new protons be created by a process similar to that, which creates electrons? Probably, but experimentation is needed in order to prove it.

Just on the evidence of the Casimir effect and the Zero Point Energy equation there is sufficient proof to conclude that the Universe is capable of expanding. Research into the possibility of creating protons from Aether (in fusion reactions) could provide even more insight into the expanding Universe.

There is evidence that the angular momentum that produces neutrinos exists outside the Aether units and in large quantities. This hidden angular momentum is dark matter. Astrophysicists hypothesize its existence. Thus, it is possible visible matter increases in mass and charge as dark matter absorbs into the Aether via the Casimir effect.

The cosmological red shift could similarly be due to the addition of new Aether units into the Universe. The amount of space-time between two points would also continually increase, giving the appearance of objects moving away from each other. This expansion would manifest as a red

shift. It should be possible to calculate the rate of Aether unit growth in the Universe using red shift data, if such a process exists.

Big Bang – Slow Bang

Was there a Big Bang? Perhaps. Maybe after the Universe expands to a certain point it collapses back onto itself, causing primary angular momentum to reach incredible density and to compact as a "big crunch," returning the angular momentum to the place where dark matter is stored outside the Aether. In this case, black holes would not release information back to the visible Universe. Once the Aether units are crushed, they are gone.

If it is shown that Aether units are capable of duplication, like living beings, then the survival of even just a few Aether units somewhere in the Universe would allow for the rejuvenation and expansion of Aether once again. However, it makes more sense to look at the Universe as a continual process of growth and decay where some areas of the Universe are going through the growth phase and others are going through the decay phase. It would mirror a standard population scenario such as humans see today. Everywhere there are people in their growth phase and others in their decay phase. Every now and then, a major catastrophe hits the Earth, wiping out large portions of the population, and then the survivors repopulate.

If the populating Aether theory were correct, the concept of a single event type of Big Bang would need reassessment. Slow Bang would more accurately describe the ever-continuing cosmological birth.

Magnecules

The electric force associated with spherical structures tends to be weaker than the electric force associated with toroidal structures. This is apparent in the nuclear binding energy equation where a nuclear binds in a spherical shape and mediates by Coulomb's constant. In electron bindings, the electrons are toroidal when binding and mediate by the Aether constant.

Most molecules have a spherical structure, but not all. Since there is a strong charge in all onta, atoms construct from onta, and molecules construct from atoms, it is possible for some atomic and molecular structures to take on a toroidal geometry. When the toroidal geometry constructs due to the magnetic alignment of the strong charges among proton, neutrons, or electrons, then the overall magnetic structure of the onta survives into the macro structure. This is the source of permanent magnetism in atoms and molecules. The more onta polarized in the same orientation, the greater the net magnetic strength of the macro structure.

When subjecting atoms to an intense magnetic field, suitable temperature and proper cooling environment, they may form molecules with magnetic properties. Dr. Ruggero Santilli first observed and identified such a

molecule while investigating a type of gas first patented in 1898[168]. He has subsequently named the type of molecule a "magnecule," as it has magnetic bindings between atoms rather than the standard electrostatic bindings.

Since the Standard Model does not recognize the strong charge of the electron, it is at a loss to quantify the electronic, atomic, and molecular magnetic properties. When fully developed, the Aether Physics Model will likely provide a simple quantification of the magnecule and lead to many similar discoveries. Since the strong charge binds with more force than the electrostatic charge, materials made with toroidal molecular structures will likely be stronger and lighter. This should be true not only for solids, but also for gases and fluids.

Already, the MagneGas™ molecule composed from a chain of H_2 and CO molecules observes to be magnetic in nature and clings to the surface of its container. When ignited, the MagneGas™ will not burn a human hand but will quickly melt a tungsten rod and brick. These unique properties attribute to both the strong charge of the onta and the toroidal macro structure of the magnecule.

[168] Hilliary Eldridge, Electrical Ketoet, patent# 603058 filed June 28, 1897 and issued April 26, 1898.

Chapter 11

PHILOSOPHY

> Self-sufficient, self-reliant, and dynamic, the mind expresses knowledge not as content but as capacity.[169]
>
> **- Tarthang Tulku**

What is Reality?

At the most fundamental level of reality the Gforce is a dynamic, highly inertial existence that gives rise to the fabric of Aether. Distinct from the Aether is a vast sea of apparently finite quantity, primary angular momentum, which when absorbed by the Aether becomes onta. Aether rearranges onta to produce different physical forms. Through motion, the forms change. Within the process of change are various manifestations of "flow," which add to the quality of our experience.

Coinciding with the mechanics and electromagnetism of the Universe is a quality we inherently recognize as mind. The capacity of the mind directly experiences the physical manifestations of Aether and onta and through a body senses heat, touch, smell, taste, sight, hearing, and emotions. The mind also has the capacity to create and store impressions of the sensations. Moreover, through various agencies, the mind can in turn manipulate the Aether and onta.

In reality, there are no individual beings living independent lives, but a grand entity with incredible abilities to fragment itself and regroup in an endless cycle of becoming. There is no separation of the mind from space, time, and form. The skin conductance of the human body is a measure of its emotions; the conductance of Aether is the collective emotion. All experience what happens to one.

Through various agencies, the mind can directly influence the muscles of the body, which in turn can manipulate matter. However, anomalous events such as the bending of metal by some yet unknown non-material force,

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[169] Tarthang Tulku Knowledge of Time and Space (Dharma Publishing, Dharma Press Berkeley, CA, 1990) 327

and the use of biofeedback machines demonstrate that there are multiple venues for the mind to interact with the material world. There may yet be venues previously undiscovered.

There is a mind quality associated with individual existence. Yet there is also a collective mind quality associated with groups of individuals. Each small community has a mental quality of its own, as do the countries these communities comprise. Does it stretch the limits of knowledge too much to suggest that there is a mind quality behind all forms of existence? A scientist might think so, but an artist might think otherwise.

Similarly, the environment in which a body exists affects the body as much as the body affects its environment and other bodies. We are as much dependent upon our environment as our environment is dependent upon us.

Just as many drops of rain come together to form a river and ultimately a mighty ocean, it seems the purpose of science and spirituality is to return our awareness to the Source. Our reality is in the truth of our unified existence.

The whole of material existence is based on just four or five specific dimensions; mass, charge, length, frequency, and possibly sphericity. The presence of four or five specific dimensions, however, suggests that even these dimensions have a common Source. Moreover, if the dimensions pre-exist time and space, they must come from a Source that shares that timeless and space-less nature. Western civilization might train a new type of "explorer" who would follow in the traditions of Eastern yogis and mystics. Practitioners employing the tools of meditation, involving reflection and contemplation, might further explore the physics of dimensions leading toward the Source.

Nevertheless, in this book we have already accepted the premise that the dimensions have a common Source. From there we progress toward the realm where we exist as human beings (away from the Source) in an attempt to understand as much as we can about our present existence.

Creating taxonomy of reality helps in our understanding. In table 1 below, we will arbitrarily call the level of dimensions "level 1." If in the future we learn to quantify the level preceding level one, we will call it level ½. The level preceding that will be level 1/3 and so on.

Therefore, level 1 is the level of dimensions. From the dimensions of level 1, the existence of units develops, which is level 2. The units include velocity, potential, angular momentum, and all others. At level 2 the concept of quantity is also introduced so that each dimension, and thus each unit, has a quantum measurement. The dimension of length produces a quantum measurement equal to the Compton wavelength.

Similarly, the quantum measurement of frequency derives from the empirical speed of light divided by the quantum distance. The quantum mass has two specific quantities, the mass of the electron and the mass of the proton. The quantum charges are the electrostatic charge and the strong charges, which derive from the onta angular momentum times the conductance constant.

In level 2 there are sublevels. The quantum distance and quantum frequency have just one measurement. The quantum mass has two measurements (electron and proton masses), and the quantum charges have several measurements.

From the units of level 2, the existences of atoms come into being as level 3. The atoms themselves have several sublevels of existence. From the atoms of level 3 the molecules come into existence as level 4. The molecules themselves have a complex system of sublevels.

From the molecules of level 4 there are several more levels of existence before reaching the human level. Then even beyond the level of humans, there are several more levels of existence dealing with the structures made by humans. This book is not particularly concerned with what precedes level 1, or what develops after level 4. It is specifically concerned with the quantum realm where physical existence comes into being.

Existence	
Level	**Description**
1/3	…closer to God
1/2	pre-dimension
1	Dimensions
2	Units
3	Atoms
4	Molecules
…	further levels leading to humans
x	Humans
…	further levels extending from humans

Table-1

As part of our physical existence, we experience the phenomena of mind, consciousness, and life "force" (or spirit). Some sensitive people can directly experience the auras around living beings. There are also documented cases of such things as the poltergeist[170] effect.

Undoubtedly, many people have not directly experienced the poltergeist

[170] "POLTERGEIST [Ger.,=knocking ghost], in spiritism, certain phenomena, such as rapping, movement of furniture, and breaking of crockery, for which there is no apparent scientific explanation. " "Poltergeist ," The Columbia Encyclopedia , 6th ed.

effect. Others would deny that there is a life force, consciousness, auras, or even mind. Likewise, respectable people also once thought that the world was flat, and that human space travel was impossible. This chapter avoids the useless effort of trying to make believers out of skeptics, rather, it speaks to those who have directly experienced the paranormal and are seeking a rational explanation for their experiences.

For example, the author has occasionally bent keys (photo of bent keys at right) without any conscious effort to do so. In one case, a key bent in my hand as I was looking at it. It felt like the key momentarily turned to soft plastic and after it finished bending it solidified in place. Similarly, other researchers have witnessed other anomalous events in their everyday lives, events that must have a cause. And since both the Aether and physical reality begin with level 2, the cause must be explainable at level 2, if the event is real.

The Aether Physics Model predicates on the assumption that dimensions truly exist and that all known phenomena can be quantified with dimensions. This also means that since the "life force" is real, it is quantifiable. Similarly, if auras or minds exist, they too will express in dimensions and there will be equations with units to describe them. That is, of course, if "life force," auras or mind originate in level 2. If such things exist prior to level 2 then we will need a new physics based on the qualities of the relevant level(s).

It must be true that any reasonable unit of dimensions has a real world analog. For example, length times frequency is equal to velocity. The reverse logic should also be true. If we have the dimensions of length times frequency we should be able to deduce that this particular combination of dimensions would represent velocity. Velocity is not a material entity, and yet it has real dimensions. Therefore, if we stand by the assumption that dimensions are real, then velocity (or motion) must also be real, except that motion is one level of reality removed from its dimensions. Of course, in this case there is also the possibility that motion is primary to the dimensions of length and frequency, and that motion is the source of those dimensions, which would explain why there is an absolute speed of light.

We must remain open to the possibility that Gforce, primary angular momentum, charge and the speed of light may be primary causes for all existence.

On a more macro level, we think of our body as real. However, if our organs could talk to us they would say that the body is an illusory construction based on the organs functioning together. And at a lower level the cells could say that the organ is an illusion, that the real function is the cells working together. Then we might hear the molecules say that cells are

illusions because they are the function of molecules working together. The atoms would point out that molecules are the function of atoms working together. And subatomic particles would say that atoms are apparitions caused by the congregation of angular momentum. And then the dimensions would point out that the angular momentum is merely the appearance of dimensions working together.

Each order of reality would consider the higher order to be an illusion with regard to the grouping of its members. Even at the level of humans we consider the concept of community to be an illusion created by the congregation of humans. Yet there may be some form of more complex consciousness among human communities, which communicates with each other and considers humans to be mere components.

It is interesting to look at the level of dimensions and reflect on what a dimension is. The only way we can experience dimension directly, it appears, is in our mind. How is it that the most fundamental form of knowable existence experiences only by the mind?

At this point we can conjecture that the more complex a level is from the Source of reality, the further that level is from being real in an absolute sense. The underlying substance of dimensions is very real, but the forms made from these dimensions are much less real, becoming more transitory in nature with each level of complexity. Further, it is the perception of the forms, which is the source of their unreal nature. The dimensions are still there, but instead of seeing the dimensions for what they are, we are seeing them for the bound forms we would rather see. An in-depth analysis of the nature of perception is the subject for other books and explains quite well in some religious and philosophical traditions.

Motion

Motion is not merely a characteristic of Aether; it gives the Aether functionality.

The Aether Physics Model shows that onta are contained within a quantum unit of Aether. Aether is what gives the Universe its fabric of space-time, and onta is the visible matter that occupies it. The onta do not leave the Aether unit they reside in. So technically, matter never moves in space or time. Material matter is as a particle suspended in water. In order to move the particle, the fluid must move.

All motion is of the Aether. The onta influences the Aether, but at all times it remains encapsulated by Aether. That is how Aether donates its electrostatic charge to onta. It is also how primary angular momentum can interact with Aether to produce strong charge. So when atoms and molecules move, the Aether encapsulating them also moves. And since the Aether is formed of force carrier dipoles, which interact with other Aether units, the Aether units between and around atoms and molecules

also drag with it.

So wherever an object is perceived, that object has its own Aether associated with it. That object could be as dense as a gold nugget, the rarefied atmosphere, or even a magnetic field or gravitational field, and the Aether will remain grouped just the same. Dense objects have more onta than rarefied objects, therefore dense objects also have more Aether density than rarified objects.

Aether behaves like a solid, fluid, and gas all at once. Because the Aether constructs from reciprocal mass, it is the *ability* to manifest reality. If there is nothing denser moving through a region of Aether, it will move with the densest system closest to it. For example, magnetic, electrostatic, and gravitational forces hold our galaxy together. The Aether of the galaxy moves as a whole. Within the galaxy are solar system and dust clouds. Each of these objects are more dense than the galaxy as a whole and influence the Aether local to these objects.

The solar systems are essentially made of a star, planets, and minor bodies. The density of the solar system determines how much local Aether it influences. A planet within that system will be the densest object in the local area and will influence the Aether local to it even more so. At a given place on the planet, there will be objects denser to the local Aether and they will preponderate. This pattern of influence continues down to the quantum level of existence.

The Aether associated with each object likely moves similar in nature to a Rubik's cube. To move through the Aether would require the displacement of other Aether units. René Descartes called this type of movement a vortex. The vortices are not limited to the three axes available to a Rubik's cube, however, and have much more freedom. A spaceship passing through the emptier regions of the solar system will push the Aether in front, which will curve back around to fill the wake. The flow of Aether would look similar in pattern to the magnetic field lines of a magnet, moving from one pole and curving back around to the other pole. In fact, the relative movement of Aether would appear as a magnetic field in relation to the ship.

Flow

Flow extends from motion and gives it structure. A river can be a flow of raindrops. The Gulf Stream is a flow of ocean current and a segment of Thermohaline Circulation. An economy is the flow of money and industry is the flow of goods. The body relies on the flow of air (breath) and blood circulation among other instances of flow. Reading is the flow of words; traffic is the flow of cars. There is flow happening everywhere and at all times.

All flow relates to the general concepts of health and sickness. If the breath or blood circulation is poor, the health suffers. If the money does not

flow, the economy suffers. Alternatively, if the flow is too strong, such as for a river, then flooding occurs. Proper regulation is essential to the health of all aspects of the Universe.

The Aether is no exception. The space-time around us and within us must also flow properly to maintain health. Western medicine has so far denied the flow of Aether through the body and environment. This is a natural consequence of denying the existence of Aether in physics. Nevertheless, ancient literature acknowledges the flow of Aether, which the East acknowledges even today. Of course, the flow does not name as Aether, but Chi, Ki, Qi, Ku, and prana, among others. In the West, a similar line of study almost came into existence calling it Orgone. Controlling the flow of Aether has found its way into the esoteric martial arts, the work of psychics and mentalists, and alternative healing methods.

Orgonomy

The study of orgone (orgonomy) is one of those "sciences" where qualified researchers have invested their hard-earned degrees trying to quantify something they could not clearly measure.

Orgone:

A universal life force hypothesized by Wilhelm Reich[171], supposed to emanate from all organic material that purportedly can be captured with a boothlike device and used to restore psychological well-being.[172]

Aether units have mass and charge, but it is reciprocal mass and charge. Just as frequency manifests differently than its reciprocal of time, the reciprocal dimensions of mass and charge also manifest differently than mass and charge.

The Aether is dynamic in that its quantum unit is a rotating magnetic field. The Gforce being the cause of this rotating magnetic field gives the impression that the Aether is alive and somehow self-perpetuating. The description of orgone seems to be similar to the description of the Aether unit in that both are associated with "aliveness," appear massless, and are

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[171] REICH, WILHELM, 1897–1957, Austrian psychiatrist and biophysicist. For many years a chief associate at Freud's Psychoanalytic Polyclinic in Vienna, he later broke with Freud and the psychoanalytic movement. Forced to leave Nazi Germany, he resettled in New York City in 1939 to continue independent research in biophysics. He taught (1939–41) at the New School for Social Research, and in 1942 he founded the Orgone Institute. According to Reich's theories the universe is permeated by a primal, mass-free phenomenon that he called orgone energy; in the human organism the lack of repeated total discharge of this energy through natural sexual release is considered the genesis not only of all individual neurosis but also of irrational social movements and collective neurotic disorder. Reich invented the orgone box, a device that he claimed would restore energy but that was declared a fraud by the Food and Drug Administration. In 1956 he was tried for contempt of court and violation of the Food and Drug Act and sentenced to two years in a federal penitentiary, where he died.

[172] Definition quoted from The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

not directly measurable.

No preplanned conception preceded the Aether Physics Model. Its development resulted from following one empirical lead after the next. The concepts discussed here are natural consequences of the science.

The discovery of the Unified Force Theory, insights into the atomic binding processes, the true nature of charge, the geometry of the Aether and other key discoveries concerning the physical and non-material world were completely unexpected. When I was approached by Jim Bourassa to research and write a book on this new theory he suggested we also write about orgone. I flatly told him that I had no data or other evidence to suggest orgone was real, *at that time*.

Then as I put the raw notes into book form and began organizing topics and developing the theory, it became clear that every physical process in nature appears to be accounted for in the Aether Physics Model. It became clear at this point that the mind, the life force, the emotions, consciousness, and other non-material aspects of experience may also be quantifiable, even if not directly measurable.

It also became clear that some aspects of the physical world, such as time, are not directly measurable, but are still quantifiable. Time infers by observing the frequency of certain regular processes (rotation of the Earth or oscillation of Cesium atoms). If time measures indirectly, but precisely from its inferred reciprocal of frequency, then there are likely other units of the Universe that measure indirectly.

As I started interacting with orgone researchers and questioning their "data" and instrumentation, I began to suspect that mind might be related to the reciprocal of mass, orgone might be the same thing as Aether, and the aura of the body might be a form of reciprocal strong charge or conductance. It could also be that there are other dimensions in greater space-time that correlate to these non-material aspects of existence. Whatever it turns out to be, the Aether Physics Model provides a valid paradigm in which these long unanswered issues might resolve.

I have had many metaphysical experiences of which precognitions, out of body experiences, and lucid dreaming are just a few. So at a level of direct experience I can relate to the concepts being put forth by researchers such as Wilhelm Reich. However, this does not mean I necessarily agree with conclusions or observations arrived at without properly acquired data. If we are to include the non-measurable aspects of experience into our physics, we are still obligated to establish a reliable method for quantifying these experiences.

If there truly is a life force, then it must be quantifiable. We can make this statement even without first verifying the method for quantifying the life

force. It is a consequence of logic. If keys truly bend without directly applied mechanical force, then there must be a quantifiable mechanism to explain the phenomenon. If objects accelerate upward off the floor such as in John Hutchison's demonstrations[173], then there must be a quantifiable explanation for this effect, too. The fact that we observe these phenomena before understanding them is part of the natural progression of learning.

Health and Healing

It is this author's insight that qualities such as consciousness, mind, and health are quantifiable with the proper interpretations of quantum data. After all, the Aether Physics Model yields the world's first and simplest Unified Force Theory. It is logical that if the physical world sorts out mathematically and geometrically through the Aether Physics Model, then the best chance for quantifying all other characteristics of living experience (consciousness, mind, health, etc) will also follow through this model.

Dale Sumburèru, DrPH, MD, has proposed extending the present health system, which treats only pathogenic disease, to a system also incorporating salutogenic treatment[174]. The essence of Dr. Sumburèru's theory is that good health quantifies and has cause; just as bad health can be quantified and has cause. Good health quantifies according to the Cellular Cosmic Signature (CCS) of cells, organs, or organisms, which is a measurement of biophotons. According to Dr. Sumburèru, the biophotons generate by living beings through the same or similar process as the photons generated by strong charge. This is just a working hypothesis at this time, but it is the beginning of a much-needed proactive approach to health and healing.

Dr. Sumburèru further suggests that Aether is "accumulated" through sleep and that "the Aether is used by the human organism to facilitate memory, the placebo effects, and spontaneous healing through the autonomic nervous system." Perhaps Aether needs to condition through proper flow *and* accumulate to maintain the life force. It would appear that the water vortices work of Viktor Schauberger involved the conditioning of Aether in water, Feng Shui is the conditioning of Aether in our environment, and generating a rotating magnetic field would condition the Aether directly.

From the view of the Aether Physics Model, it would appear that health of a body is due in part to the proper flow of Aether through and around it. This Aether flow can replenish our body through deep breathing,

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[173] The Hutchison Effect http://www.hutchisoneffect.org/

[174] "The construct of Salutogenesis is proposed as a unifying theory for medicine, health and healing. It is posited as a spectrum from the most subtle nuances of health to the most adverse medical issues where all interventions at our disposal would fit within this model. The primordial aether is assumed to be the underpinning function and the model relies on and maximizes the placebo effect for efficacy." D Sumbureru, Salutogenesis I: A Unified Theory on Medicine, Health and Healing, Subtle Energies & Energy Medicine, vol 14, #2, pp175-199

walking, driving, or bathing in Aether conditioned water. Magnets realign the Aether units of air as the magnetic field passes through it. Stretching body tissue, as in yoga, would increase the presence of Aether by increasing its flow. Individuals who have raised the level of Aether in their body could transfer this Aether to others through touch or closeness.

Such healing techniques have been around for thousands of years, but modern Western science does not understand the mechanism of these techniques. Indeed, how does one measure the presence of properly flowing empty space? Without acknowledging the existence of Aether, how could modern science ever know about its function in health and healing?

In recent times, Victor Schauberger discovered the process whereby nature uses natural vortices to rejuvenate water. Nikola Tesla and Georges Lakhovsky experimented with rotating magnetic fields generated by high frequency, using high potential apparatus as a healing mechanism. Wilhelm Reich developed orgone therapy. Others have found similar healing techniques involving Aether conditioning. However, in the West, all went to the dustbin of history because scientists did not know how to quantify the Aether.

The healing techniques of the East, on the other hand, do quantify and understand the need for Aether. In Eastern systems of medicine, Aether acknowledges as Chi or Qi (Chinese), Ki (Japanese), Prana (Hindu), and Ku (Tibetan). Other cultures acknowledge Aether in one form or another. The methods for cultivating the flow of Aether are highly developed in Eastern cultures.

It is ironic that for several hundred years Westerners considered Easterners barbaric, primitive, and uncultured, thinking it necessary to send its missionaries into Eastern cultures and purge them of their knowledge and systems of healthful living, which were supposedly based on superstition and ignorance. Yet, it might now appear that the dead and lifeless culture of the West was at times the disease and plague to ancient, balanced cultures. Our inability to measure what others could directly sense is the result of our own ignorance. Western culture must have caused tremendous suffering for "primitive" cultures by our destruction of natural and healthy ways of living.

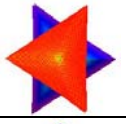
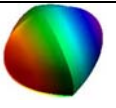
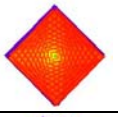
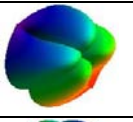
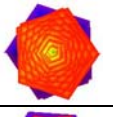
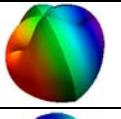
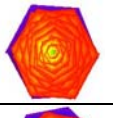
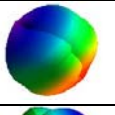
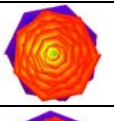
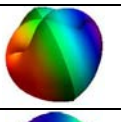
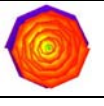
Perhaps now that we can quantify Aether, scientific research on it will begin. Perhaps our advanced technology can identify the causes of imbalance in the daily lives of living beings and our environment, and suggest ways in which to improve living. As we learn that no single culture has a monopoly on God, perhaps all people will unite as a network of distinct cultures in a greater community of planet Earth, and indeed of the Universe. Moreover, perhaps the discovery that our ancestors knew more than we gave them credit for will humble us.

Form and Beauty

The Standard Model cannot describe the simple shape of the electron. But the Aether Physics Model can not only describe the simple shape of the electron, it can also show how the entire physical realm is a symphony of form, just as Beethoven's Fifth is a symphony of melody.

In chapter 4 the reader was introduced to Aether numbers. Examples were given that show how spin position produces various forms. However, this was just an introduction to a vast field of study that will delight artists of all media.

We showed that $\frac{158}{2}\pi$ and $\frac{16\pi^2}{2}\pi$ ranges were relevant to forms produced by half-spin onn in the Aether. Below, different sequence numbers produce a table of selected forms according to the Aether function $G(x,y)=\frac{x+1}{2}\cdot\frac{x+3}{2}$ in the cylindrical coordinate system.

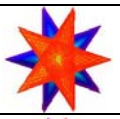
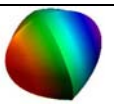
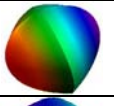
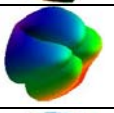
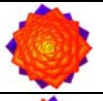
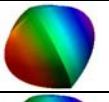
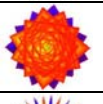
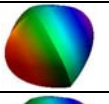
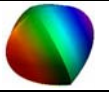
$\frac{53}{2}\pi$		$\frac{3\cdot 53}{2}\pi$	
$\frac{39}{2}\pi$		$\frac{4\cdot 39}{2}\pi$	
$\frac{31}{2}\pi$		$\frac{5\cdot 31}{2}\pi$	
$\frac{27}{2}\pi$		$\frac{6\cdot 27}{2}\pi$	
$\frac{23}{2}\pi$		$\frac{7\cdot 23}{2}\pi$	
$\frac{19}{2}\pi$		$\frac{8\cdot 19}{2}\pi$	

Notice that when the number of sides or points the shape has multiplies the base number of the image, it produces a seed or "bell pepper bottom" shaped image. It is as though the seed geometry or "bell pepper bottom" geometry is a primary form of some kind. As far as the seed shape goes, nearly all plant and animal life begins as a seed or ovum.

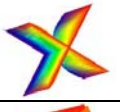
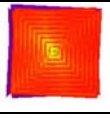
It would seem that the "bell pepper bottom" geometry is peculiar to an even number of sides or points in the shape, and the seed geometry is peculiar to the odd number of sides and points.

More of the primary set images follow below. Notice the near perfect symmetry of the stars. Perhaps it would not be surprising if all the stars

had an even number of points. However, most of the stars have an odd number of points.

$\frac{63}{2}\pi$		$\frac{5\cdot 63}{2}\pi$	
$\frac{45}{2}\pi$		$\frac{7\cdot 45}{2}\pi$	
$\frac{59}{2}\pi$		$\frac{8\cdot 59}{2}\pi$	
$\frac{35}{2}\pi$		$\frac{9\cdot 35}{2}\pi$	
$\frac{43}{2}\pi$		$\frac{11\cdot 43}{2}\pi$	
$\frac{73}{2}\pi$		$\frac{13\cdot 73}{2}\pi$	

The fact that so many non-repeating images could appear in the primary set, and with such precision of form, is astounding. It is further awe inspiring that these forms are, in fact, the forms of living things as reflected in flowers in particular, plants in general, and sea creatures to name a few.

Cylindrical Coordinates		Spherical Coordinates	
$\frac{16\pi^2}{2}\pi$		$\frac{16\pi^2}{2}\pi$	
$\frac{8\pi^2}{2}\pi$		$\frac{8\pi^2}{2}\pi$	
$\frac{4\pi^2}{2}\pi$		$\frac{4\pi^2}{2}\pi$	

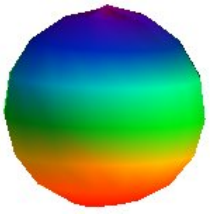
In the above images, using the Aether constant of $16\pi^2$ and its divisions, we further generate interesting images.

The $4\pi^2$ constant, which is the constant of a toroid, indicates that the perception of three angular dimensions of length in the form of a cube is the result of toroidal onta. This would explain why the Cartesian coordinate system best explains our human perception of space, while the cylindrical and spherical coordinate systems best explain the way onta experience space.

This book also demonstrates the effect of *Phi* and *phi* numbers and their relationship to physical constants such as the g-factors. We can set G to be a function of the *Phi* and *phi* numbers:

$$G(x,y)=\frac{\left|\sqrt{x}\right|+1}{2}\cdot\frac{\left|\sqrt{y}\right|+3}{2} \tag{11.1}$$

In this case, since 5 is already known to be a full cycle with *Phi* and *phi* numbers, we set the range to be 5π and the surface plot appears as nearly a sphere:



Not covered here are many other interesting observations made from the *Phi* and *phi* contour plots.

The Gforce manifests through the Aether unit. Presented earlier was the reduction of reality down through to the level of dimensions. Now we see the profound relationship of Aether spin positions to the general forms of living and growing things. Taken together, a picture is emerging that shows the method and harmony of all things as evolved from an all-pervading God. Of course, there is a need to expand the detail of the method and harmony, but this is a start.

God

> The physical vacuum is a manifestation of conscious Spirit, and material science has correctly recognized that it is all-pervading and full of infinite energy. However, physicists are at a loss to explain how the vacuum came to exist in the first place, so it is viewed - like God - as eternal. The new physics is on the right track, but unfortunately it is considering the physical vacuum to be the final cause of existence rather than what it actually is; the last link in a causative chain that extends from God, through the action of Spirit, to the material creation[175]. – Brian Hines

Since Aether units are independent units of 2-spin rotating magnetic field, without any solid substance of their own, and eternally dynamic in nature, then there must be more to Aether than mere empty space. The existence of an all-powerful, all pervasive God supports by the presence of the Gforce in the Aether constants, by the existence of the dimensions and the principle of reductionism.

One cannot study the Aether without developing an appreciation and awe for the beauty of the Creator and the Creator's manifestations in all that

[175] Brian Hines, God's Whisper, Creation's Thunder (Threshold Books, Brattleboro, VT, 1995)148

exists. Even if the world were some sort of elaborate illusion, we still see the witnesses to God all around us. With all the evidence for an ordered existence arising out of the mind-like qualities of dimensions, even the most skeptical among us could understand the rational logic for the existence of God.

With the Aether Physics Model, we can also learn how to separate the truth of what God is from the myth imbued by the culture surrounding a given religion. For example, the physics do not support the concept of male superiority (or female superiority for that matter), neither does the theory single out a specific name or a specific geographic location for God. Nevertheless, the science clearly supports the qualities of the Creator as an all powerful, all pervading, living and dynamic force.

Perhaps by understanding physical existence with the assistance of the Aether Physics Model, humans will better be able to appreciate God and learn that we all share the same universal heritage and the same destiny. Perhaps we will see the benefit to all life that comes from balancing the flow of Aether and all physical existence.

Consciousness

In chapter 3 the Gforce was shown to be the single force from which all forces arise. The Gforce is enormous and acts through each quantum Aether unit. Whatever the Gforce is, and wherever it comes from, the Gforce pre-exists physical existence and gives rise to it.

It is probably not possible to quantify something that pre-exists the physical Universe. In addition, whatever it is that pre-existed the physical Universe, it must have a non-material quality. Several of the world's major religions and cultures generally refer to enlightened mind as some kind of non-material, pre-existing, all-powerful, and creative force of the Universe. In this book, we accept this non-material, creative Gforce as a postulate and accept it as "pure, enlightened Mind," or "God." Each quantum Aether unit is structure of a more complex order of God, or mind. The sum of all quantum Aether units or any quantity of Aether units has the identical properties of its parts. This "God Mind" thus postulates to be present throughout the visible Universe and to apply equally to all objects, regardless of their size, constitution, and structure.

Having postulated a Universal Mind of God, based in part on empirical observations, we can now attempt to quantify the individual consciousness of this Universal Mind as perceived through a human body's senses.

Each order of physical reality is matter, bound within an environment, but in a more complex form than the previous level. Just as the Gforce evolves into the electromagnetic, electrostatic, and gravitational forces, and ultimately into various other manifestations of force, the living God Mind evolves into complex manifestations as well. Masaru Emoto shows

evidence that water possesses a quality of mind. We suspect that cells possess a quality of mind. We accept that our complex human form possesses a quality of mind. If the Gforce is the God Mind, and water and cells possess a quality of mind, as do humans, then what logic would allow for the other levels of existence to not possess a quality of mind? It is reasonable to conclude that the God Mind evolves (or devolves) into the consciousness we are familiar with, just as onta evolves into the human form.

From the physical perspective, the Aether as seen through "God's eyes" exists as a 2-spin, space-resonance domain. The physical body, composed from onta, exists in a ½ spin, space-time domain. God consciousness thus exists in at least one more dimension than physical-based consciousness.

As far as this discussion goes, God consciousness only describes as the basis for physical consciousness (ego). One can only *know* or *feel* the direct meaning of God consciousness since the source of God consciousness pre-exists the physical Universe. The methods for setting aside physical consciousness so that God consciousness can be known and felt are well documented in Buddhism, Hinduism, A Course in Miracles, and other systems of thought. This section is concerned primarily with quantifying the physical consciousness in such a way that we can develop an understanding of how physical consciousness relates to the physical Universe. In general, when referring to consciousness, we will be referring to individual consciousness (or ego) and not God consciousness.

Psychophysiology is the branch of physiology dealing with the relationship between physiological processes and thoughts, emotions, and behavior[176]. The primary tool for measuring the thoughts, emotions, and behavior with regard to our physical body and physical environment is a device that measures electrodermal activity (EDA). EDA is another way of saying "skin conductance." Therefore, it is intended that the devices used by psychophysiologists today measure skin conductance.

According to the Standard Model, the reciprocal of the conductance unit is the resistance unit. However, data clearly shows that skin conductance does not have a linear relationship to the skin resistance. According to the Aether Physics Model, the reciprocal of conductance is the magnetic flux unit. Moreover, as presented earlier, evidence exists that shows a linear relationship between conductance and magnetic flux. Thus, there is already sufficient evidence to show that the reciprocal of conductance is magnetic flux, and not resistance.

If the Aether Physics Model is correct, then conductance is not equal to

[176] The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

current divided by potential, as the Standard Model shows. In the APM, conductance is equal to frequency divided by potential:

$$Cd = \frac{freq}{potn} \tag{11.2}$$

Conductance is also equal to charge per angular momentum:

$$Cd = \frac{chrg}{h} \tag{11.3}$$

Properly designed equipment will calculate conductance based on the frequency per potential between a pair of electrodes. The conductance between two points can produce useful data, but the ultimate device for measuring and observing conductance would produce a surface color map of all cell conductances (or conductances for any particular order of reality). The Aether Physics Model predicts this is possible. Essentially, a device that produces a color map of conductance over the surface of a body would give a view of the body's aura. We could then explore the reading of the aura as an accurate medical diagnostic tool.

If we wanted to see the body's aura in terms of light (ligt) then we would have to accelerate the strong charge per conductance of the measured body:

$$ligt = \frac{chrg \cdot accl}{Cd} \tag{11.4}$$

Is there such a process that could map the body's conductance by accelerating the strong charge and presenting a map in the form of light?

> In 1939, the same year that Reich claimed to have discovered bioenergy in the form of orgone, a Russian scientist, Semyon Kirlian discovered a novel form of photography that, for the first time, appeared to show unmistakable evidence of just such a field – a field that Russian scientists called bioplasmic energy. Kirlian's invention makes use of the Tesla coil – a high-voltage, high-frequency electrical device – to photograph living tissues. Experimenters have used frequencies between 20,000 and 3,000,000 cycles per second, and voltages between 20,000 and 50,000 volts, to generate electric fields that cause electrons to be pulled out of the surface of living tissue such as human skin. The process is not destructive or painful but it does enable the pattern of electrons, in turn, to generate light that can expose a photographic plate[177].

Kirlian photography appears to be a valid science, or at least there are equations that predict it. Perhaps we need to do more research to better develop the Kirlian photographic method.

[177] Richard Milton, Alternative Science: Challenging the Myths of the Scientific Establishment (Rochester, Vermont, Park Street Press, 1996) 70-71

In the Aether Physics Model, as we simplify within the various orders of reality, we pass from molecules, to atoms, to units, to dimensions, and ultimately to God. As the order of reality reduces in complexity, we get closer to the ultimate truth. Progressing toward the more complex levels of reality, we get further away from God, but the level of sophistication in our experience becomes more detailed. Therefore, the two aspects of our mind, the God consciousness and the ego consciousness, tend to evolve mutually exclusive of each other, even though we view ego consciousness through the God consciousness. Furthermore, it would appear that there are other measurable and knowable levels of consciousness allowed, based upon the different orders of reality.

We can postulate that the God consciousness is a given, but ego consciousness must exist due to physical laws since it perceives the physical world. Many philosophers, ancient and modern, have wondered how it is that the mind interfaces with the physical world. The Aether Physics Model offers a solution to the problem.

The physical matter making up a human body can identify more or less as something isolated from its environment, although this is a misperception. The distinction between what constitutes the body and its environment is not entirely clear because we are constantly exchanging molecules with our environment through breathing, drinking, eating, defecating, urinating, and perspiring. Furthermore, Aether always encapsulates onta. Yet at any given time we can say "this is my body and it has certain characteristics apart from other objects and apart from the environment." The characteristics we are primarily concerned with are the molecules in the brain and blood, though ultimately all the molecules in our body contribute to our present state of ego consciousness.

At the quantum level, we have defined the Aether unit and postulated that the God consciousness dwells within it. We also know that as angular momentum spins through the conductance of the Aether unit, the Aether produces strong charge. Angular momentum interfacing with Aether conductance presents a physical experience to the Aether consciousness. At the quantum level, the Aether consciousness experiences all electrons and protons in the same way. However, at the atomic level, the total geometry of the atom presents a different experience to the Aether consciousness for each type of atom. Similarly, at the molecular level, that geometry is much more complex. The Aether consciousness experiences the complex geometrical structures quite differently. Therefore, it seems that the consciousness of a given collection of molecules is associated with the total molecules of the entity, even though there is also consciousness at the level of each individual onn. In other words, there are different levels of consciousness in a complex entity, each occurring at the various levels of reality. Hence, at the human level of reality, we perceive individual human consciousness, but awareness also exists of group consciousness and global consciousness.

Truth

For some, truth is what we believe in. This sounds good at first, until we question what is doing the believing. In this book, we show the various orders of reality within the physical world. We also show evidence that each order of reality animates by a living force, a living substance, and in a living environment. More specifically, the self associated with our body is a level of consciousness peculiar to our experience at the level of the body.

The self we are familiar with is the consciousness of a particular group of organs, cells, molecules, atoms, and onta, which compose the body and its environment. When the self says, "I believe," it is the group consciousness of that limited portion of the Universe, which is making the statement. Therefore, the perception and belief in that truth reflects those limitations.

There is another kind of truth, which reveals to us. We do not have to interpret it to make it true, although we may have to interpret our sensations in order to understand it. The Gforce and dimensions *are* what they are. Since we are thinking with consciousness associated with the body, our knowledge of the Gforce and dimensions comes through our senses. Knowledge that comes through the senses needs interpretation since it arrives to our awareness as sensations. Nevertheless, the underlying truth, which the body senses, *is* what it is. Therefore, there is an absolute truth, which we can know and interpret correctly.

War and Peace

When the Standard Model was developed, the United States was at war. Scientists were under pressure to produce more powerful and destructive weapons. Thus, the "mass equals energy" paradigm was quite attractive to the military industrial complex. After all, the winner of a war is the one who strategically commands the most energy.

Ironically, the *cause* of the wars was also about strategically commanding energy. Energy, like money, has corrupted individuals and entire cultures. There is nothing wrong with money or energy. They are good, and they are essential to the structure of civilization. However, money and energy are not the only foundation of civilization.

Civilization is a collection of living beings, each of which exists at various levels of existence. Science should not only be about killing beings, if it even should be about killing at all. Science has an obligation to further all aspects of society so that health, harmony, and individual satisfaction are the purpose for the existence of science.

The needs of living beings are not met merely by the provision of comforts for the body, and a safe community, with fairness for all. These are

essential, yes, but the need for purpose in life is just as important. Each living individual must have a purpose, a reason for existing in the first place, if any of the creature comforts are to be meaningful.

The "mass equals energy" paradigm is not only fallacious; it is also empty. How will science ever truly fulfill the needs of living beings with a paradigm, which enlists false equalities and false logic? Even though the data behind the Standard Model is good, that does not mean the theory that explains the data is good. If we expect our citizens to abide with common sense and fidelity, then our science and religion must set the example.

Visualize a paradigm, based on the empirical data, which clearly shows the development of the physical Universe from a living God. Imagine a model that children can understand and conceptualize, which illustrates for them a simple and common sense explanation of how an all-pervading, eternal Gforce gave rise to the world into which they were born.

A physics model that gives a clear conduit of development from God to the learner creates a link between the Creator and the creation. This link gives a sense of belonging, and develops a sense of purpose in life. And what could our purpose be other than to create the conditions that will further our understanding of the Source of all life and all existence?

There are generations who are thankful they won their wars, regardless of the cost, and perhaps rightly so. However, the present generation's gratitude is better spent being thankful that no more wars need be fought. We have before us now a new opportunity to establish balance and harmony within civilization through the marriage of science and spirituality. We now have a tool that not only increases the knowledge of our physical world, but also can help us find common ground in our spiritual paths.

Perhaps for the first time ever, pure knowledge reveals, not this time to the priests and their chosen initiates, but now to all humans. And even more fortunate, this knowledge is not about technologies of war, but of technologies of peace.

The Aether Physics Model is about truth in science, but it is also undeniably about truth in spirituality. Whatever spirituality may be, and whatever we call it, nearly everybody acknowledges that it exists. Perhaps spiritual reality is merely a quality of mind; perhaps it is much more than that. However, whatever truth is, we must all seek it together, not in war, but in peace.

Chapter 12

BIRTH OF THE APM

When I was in high school and was first introduced to Einstein's Special Relativity Theory, I questioned my science teacher as to the accuracy of the equation, $E = mc^2$. I pointed out that E and m were just dimensions and c was a constant with a value and dimensions. I explained that in algebra we were not allowed to write such an equation because it was not a true equality. Then my science teacher told me something that would change my attitude toward science for the rest of my life. He told me that he had asked the same question in college and was told that if he did not accept $E = mc^2$ as an equation, he would not pass his class. He followed up by telling me that if I wanted to go to college the same held true for me, that if I did not accept the established science doctrine I would not pass either.

That was one of a few experiences that taught me early in life to question everything. I'm skeptical about any knowledge not founded in logic or math and where I'm expected to believe something just because somebody else says so. As life turned out for me, I did not go to college except for a few classes of particular interest. But since I was willing to read up on any subject that interested me, I managed to get by without a college degree.

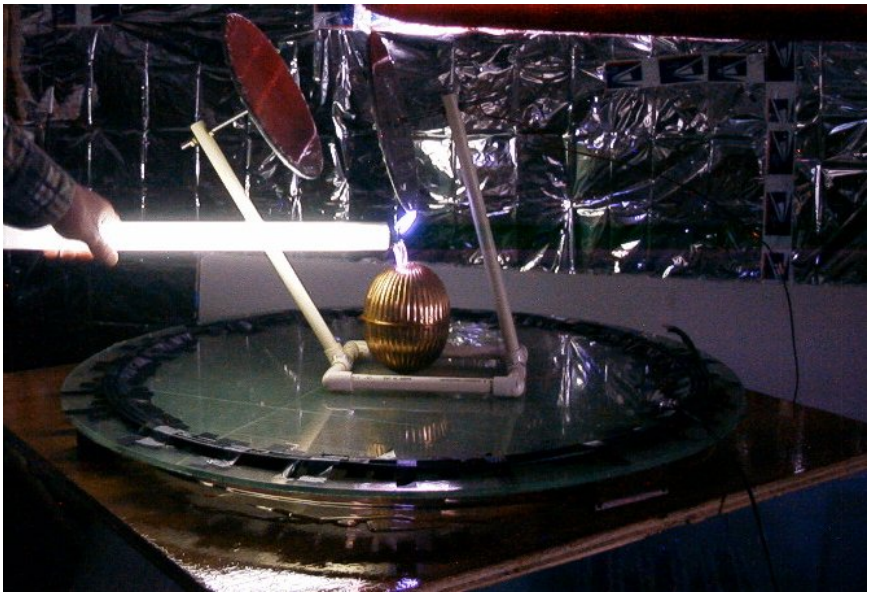
Although I studied religion, philosophy, history, politics, electronics, computer sciences, auto mechanics, cooking, organic gardening, and many other subjects over the next two decades, I was in my late thirties when I finally decided to study quantum physics.

My studies began with the building of Tesla coils. I then started a business, buying and selling military surplus, and did well on eBay for a couple of years. During that time I acquired test equipment and materials for my experiments. I also studied every piece of literature available on the work of Nikola Tesla.

Intrigued by Tesla's deep interest in flat spiral and conical secondary coils, I studied his Wardencliffe patents and literature carefully. I deduced that

he finally settled on a combination flat spiral and tall solenoid secondary coil system for oscillating the Earth's electrostatic field.

In building and testing flat spiral Tesla coils, I discovered that there were two distinctly different manifestations of electricity simultaneously coming from the same coil. In the photo below, I am holding a fluorescent tube near the terminal and ground wire of a flat spiral coil. The sparks between the tube and the terminal (copper ball) are thin, purplish, and jagged. The sparks between the tube and ground wire are thick, whiter, and smoother. The camera barely caught what was a clearly visible phenomenon.



I didn't find a satisfactory explanation for the two different manifestations of electron current in the literature or from knowledgeable Tesla coil builders, so I decided to put aside the experiments and take a closer look at the physics involved.

The Aether Physics Model got started as a "what if" proposition. According to the Standard Model, the constant c^2 has no physical meaning and is merely a constant of convenience or constant of proportionality. So I started looking at the constant and after a while I realized the c^2 constant actually involved steradian geometry.

Then I started looking at charge, Coulomb's constant, the Newton gravitational constant, and others. In my mind, I had speculated that if electrons and protons had quantum mass and quantum charge, then there must also be quantum distance and quantum time. I searched for candidates for a quantum distance and after trying the Compton wavelength, the theory started developing rather quickly. Soon after, I stumbled upon the conductance constant. In addition, when multiplying the conductance constant by angular momentum of the electron (Planck's constant) I came up with a value of charge that was not the

elementary charge.

Everything was fitting in nicely except this strange value of charge. I was not ready to give up on this newly developing theory yet, so I played around with the constants until I found the relationship between this new charge (strong charge) and electrostatic charge. The relationship involved 8π times the fine structure.

I had to reflect on this strange appearance of elementary charge, new charge, and 8π times the fine structure for a few days before it dawned on me that I had found the other type of charge I had been looking for. Then suddenly the concepts illuminated in my mind and I realized I was looking at the foundation for a mathematically correct Unified Force Theory. The new charge I had found was the charge associated with the strong force and which had been incorrectly attributed to the pi meson particle in the Standard Model.

For two full years, I continued developing the theory and called it the Quantum Physics Model. Everything I was discovering involved the quantum physics of particles.

I tried sharing my discoveries on USENET in the sci.physics level of newsgroups with very limited acceptance. Mostly I received ridicule and contempt for breaking ranks with the Standard Model. A very small percentage of my posts were ever accepted to the sci.physics.research newsgroup and most were returned with a canned response stating the content of my message was too speculative for the group. I had several engaging discussions with knowledgeable folks on the USA-Tesla and Free_Energy mailing lists at Yahoogroups.com. Moreover, while the folks at those groups were at times more accommodating, nobody was willing to publicly admit that the math was correct and the theory self-consistent. There was a stolid kind of fear present when it came to jumping ranks with the Standard Model in favor of the Quantum Physics Model.

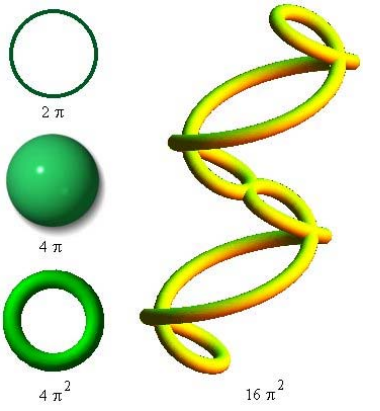
Then in a fortuitous encounter, I answered the challenge Jim D. Bourassa posted online to produce a mathematically correct Unified Field Theory, which he was willing to pay for. I showed him that I had already discovered it. Jim and I corresponded for a couple of months and then he decided to generously fund my research.

Until I met Jim, I only *suspected* the Aether exists. I had attributed Coulomb's constant and the other non-material constants to properties of the Aether, but it was more out of poetic license than having direct evidence of Aether.

However, after a few exchanges with Jim and listening to his intuitive insights, and having access to a substantially greater library of literature and lab

equipment due to Jim's generosity, it gradually became clearer that Aether was much more than a bunch of constants and was a dynamic, geometrical structure of space and resonance.

The biggest leap toward understanding Aether came when I enlisted the help of Tom Gutman to design MathCAD worksheets to represent the constant of $16\pi^2$. I could visualize a geometrical progression from 2π to 4π, to $4\pi^2$, to $16\pi^2$ and wanted to know what $16\pi^2$ would look like.



After figuring out the geometry of $16\pi^2$ the process of discovering the Aether and its equations was intuitively easy. The discoveries came so fast after that that I could not see an end to them, and still cannot.

It was during this time that Jim and I realized, undeniably, that a very real Aether existed. It was then that Jim suggested we change the name of the theory to the Aether Physics Model. I was reluctant only because I had been the one to think of Quantum Physics Model. However, Jim was right. What sets the Aether Physics Model apart from the Standard Model is just that, the Aether. And so it became.

This is an abbreviated history of the Aether Physics Model. It is presented for those who are curious about how this theory came to be. But it is also presented for those who spurn speculation in a scientific document. I wanted to show the importance of speculation in luring out vital clues, which could sometimes lead to significant discoveries. This book is based mostly on solid empirical data. In some instances throughout this book I feel I'm close to another discovery, but haven't quite hit home with it. So I have printed in these pages my speculations, leaving open the possibility that someone else more skilled in the computer sciences, mathematics and physics would see what I was missing and close the gaps.

Discussions

The following are excerpts from discussions I've had with others while developing the Aether Physics Model.

From: David Thomson
Newsgroups: sci.physics.relativity, sci.physics
Date: 2002-09-28 15:03:03 PST

Science claims to be based on facts and empirical evidence. But science does not claim to have truth. Science is merely a collection of theories used to explain facts and empirical evidence. On these newsgroups, it is not the measured facts we question, it is the often lame theories that use

metaphysical terminology and oxymorons to explain observations.

Those of us who provide alternative views and equations for ordering and predicting known data often rely on common sense as part of a healthy skeptical attitude. Common sense tells us that if a theory sounds wrong, is expressed in metaphysical terms, and defies logic, then it is suspect and we shouldn't invest too heavily in the theory. I for one don't believe in the metaphysical wave-particle duality and uncertainty principle. Common sense tells me that an object cannot be both a solid and a wave at the same time. Common sense tells me that if something exists, it exists in a specific manner, in a specific place and at a specific time.

From: David Thomson

Newsgroups: alt.philosophy.zen, sci.physics.particle

Date: 2002-09-06 12:05:28 PST

> Can anyone out there please clarify exactly what TIME is and how it is manifested? If it is completely distinct from the material world then how does it manage to affect the material world...or doesn't it? Do things age because of time or is time simply a way of measuring the aging process?

My view is that time, space, and mass are united in an indivisible nature called angular momentum. Angular momentum of the type that produces electrons, protons, neutrons and photons (and other subatomic particles) is of the dimensions: mass times length times velocity.

This can be visualized as a line of fixed length (Compton wavelength) moving laterally at the rate of one Compton wavelength each 8.039 x 10^-21 seconds. The area scanned by this angular momentum contains the full mass of the subatomic particle.

In effect, the particle of angular momentum begins in one moment and ends in the next quantum moment and covers an area of one Compton wavelength while imparting a mass of one subatomic particle.

So time, space and continuity of matter are a function of angular momentum. Time, space, and mass come to a common, indivisible reference point in angular momentum. It is because subatomic particles have the same angular momentum throughout the universe that time, space and mass appear consistent throughout the universe. This is also why the speed of light is constant. Photons are angular momentum and as such they can only propagate through a vacuum at the rate of one Compton wavelength per quantum time period (8.039 x 10^-21 sec).

From: David Thomson
Newsgroups: sci.physics.relativity, sci.physics.electromag
Date: 2002-11-18 10:30:36 PST

> > What's more, the complete unit of the electron is its angular momentum, not just its mass. There is no such thing as physical matter with dimension of mass but no dimension of length.

> Two photons. Zero dimension, but non-co-moving... so the velocity vectors of each would have a dimension of length/time... Besides, how did they determine the "size" of an electron?

Apparently size by mass and length is not a necessity for determining the dimensions of an electron. The electron is angular momentum. It is not a "thing" per se. You are used to chunks-of-matter thinking. The dimensions and values of subatomic particles do not support the concept of size-in-terms-of-length. The mathematics describes the "radius" of a subatomic particle as a fine structure constant. The fine structure constant is a spherical ratio between elementary charge and strong charge. The "size" of an electron (proton, neutron) is determined by distributed charge, not distributed length. This is why modern science cannot grasp the intricacies of subatomic physics. The Standard Model adherence to hbar is testimony to the lack of understanding that the subatomic physics nature of "size" is predicated on "mass and charge" and not "mass and length."

Modern physics does, however, get credit for accurate measurements of subatomic mass, charge, length, permeability, permittivity, Coulomb's constant, gravitational constant, electron fine structure constant, electron angular momentum, and light speed. From these knowns it is very easy to develop the correct physics based on the concept that distributed charge determines "size" at the subatomic level instead of distributed length.

I had asked a question on sci.physics.research and the moderator tagged the message with the note below:

From: David Thomson
Newsgroups: sci.physics.research
Date: 2002-08-11 12:53:42 PST

It is well known that the electron has a fine structure constant and that it manifests as spectral lines in energy patterns. Has any research been done to measure a fine structure constant for the proton and neutron?

Dave

> [Moderator's note: the fine structure constant is e^2/hbar c; it doesn't really have anything special to do with the electron, despite the fact that people like to call e the charge of the electron. - jb]

As I show in the Aether Physics Model, the angular momentum of the electron is quantified as h (Planck's constant). In the Standard Model, hbar is used to represent the angular momentum and is equal to h/2π. (As far as I can tell, Niels Bohr was the first to divide h by 2π as it appeared to be his belief that angular momentum was a circular path and therefore dividing it by 2π would give the location of the electron as a point somewhere on the circle. The concept of balls-in-orbit angular momentum was subsequently dropped in quantum physics, but the constant used by Niels Bohr continued in use. There is no scientific basis for dividing the angular momentum by 2π). Therefore, since the angular momentum is shown to be equal to the electron in the Aether Physics Model, the fine structure expression used by the Standard Model does specifically apply to the electron.

The frustrating aspect of this exchange is that the moderator has authority to judge what he thinks is correct and prevent alternative explanations from being presented. Most of my posts to this newsgroup were rejected based on the judgment by the moderators that my theories were too speculative, even though the math agreed perfectly with the data.

Partnership

As a self-taught scientist trying to revamp 100 years of physics developed by thousands of the world's leading authorities, I have had difficulty finding understanding ears for what is now known as the Aether Physics Model. Apparently, presenting a consistent dimensionally correct mathematics, which is perfectly symmetrical, perfectly reductionist, and a geometrically correct system of physics is not enough. What good does it do to share knowledge with people who choose not to understand new concepts?

Sometimes the greatest contributors to society are not the professionals, but the people with vision, hope, a sense of adventure, and the resources to manifest dreams. There is no reason these people couldn't work at the National Science Foundation, but apparently they don't, as my earlier request for funding was inadequately reviewed and unceremoniously denied. Fortunately, however, there are visionaries who succeed on their own merits and have the fortitude to apply their success through anomalous researchers such as myself, for the benefit of others.

I approached Jim Bourassa in July of 2003 with the then Quantum Physics Model. Jim had already been working on quantifying the Aether when we met over the Internet. His approach to presenting his theory was to provide graphic examples of what the Aether must be, based on his understanding of the prevailing scientific literature. Jim then commissioned Jon Lomberg, a world-renowned artist whose work has

appeared at the Smithsonian Institution for Science for ten years. Jon is also regularly commissioned by observatories and national space agencies to produce artistic renderings of new astronomical discoveries. Mr. Bourassa then used the artwork commissioned through Jon Lomberg on his web site (www.quantumaetherdynamics.com) to expound his concept of the Aether and its function. Below are relevant excerpts from our communications, edited lightly for grammar.

From: Jim Bourassa
To: David Thomson
Sent: Sunday, August 03, 2003 3:51 PM
Subject: Re: Dave Thomson / Bourassa-Thomson Theory of Everything

...
By pooling resources, I see us accomplishing much more together than we can do separately. It is especially difficult when trying to "buck the system," since science is frequently driven by egos and careers vs. any kind of scientific method.

We will have quite an uphill battle, but together we can do more.

Thanks,

Jim D. Bourassa

From: Jim Bourassa
To: David Thomson
Sent: Thursday, August 07, 2003 8:08 AM
Subject: Re: Dave Thomson / Bourassa-Thomson Theory of Everything

Good morning, Dave!

Of course, I completely agree with your assessments below. When I had independently arrived at most of your conclusions (minus the math) and then saw your website, I "knew" you were right. As I always say, reality is the final judge.

The average person is going to wonder how generations of scientists missed what we see is so obvious (structure of first generation particles as toroidal geometry with 2 opposing streams, a dynamic Aether instead of empty space, a simple explanation of the forces and of the photon).

In my opinion, the only famous scientist in the 20th century to grasp a little of this was the late Dr. Wilhelm Reich and his Orgone. The best successor to his work is James DeMeo. His site is at: http://www.orgonelab.org/about.htm

I have a copy of his "ORGONE ACCUMULATOR HANDBOOK," and own a small accumulator, which I have been experimenting with.

A great article on Dayton Miller's Ether-Drift Experiments is at: http://www.orgonelab.org/miller.htm and http://www.orgonelab.org/MillerReich.htm

Unfortunately for Reich and his followers the focus was on the sexual energy aspects of his theories at the expense of pure physics. The physical Orgone (or Aether, as I prefer) explains so much of how reality works. I believe Wilhelm Reich's greatest accomplishment was to measure the Aether and define some of its properties. Obviously, some group wanted him stopped, and was very effective in discrediting him and ultimately terminating him and his work (for a time).

Thanks,

Jim D. Bourassa

From: David Thomson
To: Jim Bourassa
Sent: Wednesday, August 06, 2003 10:07 PM
Subject: RE: Dave Thomson / Bourassa-Thomson Theory of Everything
[Jim asked the opinion of other scientists for their views of my theories. My commentaries to Jim are between *** and ---.]

> As you asked, I took a rather quick look at Thomson's model on his site. Without a detail study, it is difficult to make a conclusion. But my first impression is that I am not impressed.
> Since I am very busy recently, I don't think I have a desire to dig further into Thomson's model at present.

***You have to expect most folks with a PhD are rather busy. And if they can't take the time to fully understand the foundation, there is nothing there that can impress them. My web site is not full of graphics, and the theory is truly revolutionary. I introduce many new concepts, such as quantum dimension analysis, two types of quantum charge, geometrical structure at the quantum level, primary angular momentum, the conductance constant of free space, and a mathematical Unified Field Theory. These are all essential to understanding the theory and without taking the necessary few hours to study it, not even a PhD will see its value. Yet, even a person with high school physics can understand the theory as it is coherent, visual (that is it can be graphically modeled by software), and only uses the simplest of mathematics.---

> I have reviewed part of the Quantum Physics Model by David Thomson. It is great that people like you and David Thomson are actively trying to explain all of physics in a single model. You both seem to be trying to write a book, which explains all of physics, so perhaps you could collaborate, or at least read each other's drafts for errors. Normally, when writing a textbook at the graduate level, one must use references from refereed journals. There are hundreds of very talented Ph.D. physicists working in this field, and I don't think it likely that they are all not contributing anything that should be referenced. That is how physics research progresses. A good textbook would reference about one journal paper per page.

***I'm able to reference several good journal papers per page. There are a lot of recent physics discoveries due to advanced measuring techniques that yield results that match the QPM. I have referenced some of the work on the web site. But before I go to publication I'll do a thorough search for papers relevant to the theory.

My strategy has been to look at raw data and allow the theory to emerge. When something pops up that matches known experimental data, I start homing in to develop the theory. In the process I discover the works of others that support the theory. Essentially I'm discovering quantum physics all over again just so I can see if there was something missed, or not, by someone else. ---

> Both your model and David Thomson's model are intriguing, and, if ever a book comes out, I may very well read it. The problem I have is that if either of you were right with your theory, you would be explaining a dozen or so fundamental, unknown to date, physics problems or questions. Thus, you would be eligible for a dozen or so Nobel Prizes all at once, which is impossible. No one is that talented or lucky.

***No one? Why not? The theory is completely revolutionary. It starts out with a completely different set of assumptions. If these assumptions happen to be correct, then it would follow that there would be much more than a dozen new fundamental equations and explanations, not previously known. Maybe it's rather more amazing that so few scientists made just a single discovery. It would seem that if they had the correct foundation to begin with that one solution would quickly lead to several more solutions, as it did with me.---

> I encourage you to continue your research and collaborate, if you wish. Remember, however, that a small positive contribution is a good goal, too. You do not have to

explain everything all at once.

***I appreciate that advice. Any contribution to the good of humanity is a good contribution. But I'm not going to sit back with false modesty and pretend there isn't a whole new approach to physics here. There is. And the opportunities for many new discoveries are plentiful and easy to obtain, if someone would just take the time to study the theory so far. I'm certain I'll have the nuclear binding energy equation this year. And I hope to have the atomic spectra equation by next year. If nobody else jumps in to claim some of the prize, we're going to be collecting the Nobel Prize in physics for five years or so.

There is so much this theory can do for nanotechnology, DNA research, chemistry, nuclear physics, electrical engineering, and every other branch of science. You know how people missed the opportunity to get in on eBay stock, Apple Computers, and other perceived underachievers? There will be many physicists who will also miss the boat here, too. For the little time it takes to understand this theory (a few days for a PhD perhaps) these guys could be inspired to make their own contributions and be among the first specialists to have a crack at making significant discoveries. They could even beat me to the punch with the nuclear binding energy equation and the atomic spectra equation. These two equations, either of them alone, is worth a Nobel Prize in physics due to their immense utility.---

> Briefly perused David's website -- very impressive! I'll have more time to look over the information when I return from the San Francisco architecture conference around August 12th.

***If he has any questions, let him know I'm available to answer them. There will be one PhD who will investigate this theory and see its value. That one break is all that is needed.---

Dave

In addition to sharing a vision and providing resources, Jim also shared some of his views in our exchanges. The theory was still in the process of development (and it still is) and so we bounced ideas back and forth looking for inspiration. Not all the ideas we discussed made it into the Aether Physics Model, but the sharing of ideas did sometimes lead to significant discoveries. One such success was when Jim asked me if the Golden Ratio had anything to do with the atom.

From: Jim Bourassa
To: David Thomson
Sent: Sunday, August 10, 2003 12:23 PM
Subject: Dave Thomson / equation that predicts the nuclear binding energy

Hi, Dave:

My intuition tells me that Phi (or Golden Mean or the Fibonacci sequence) is "hidden" within the atom, so you might want to try that. I am no mathematician, but does the number 1.618... appear in comparing any two binding energy numbers?

An equation that predicts the actual measurement of the nuclear binding energy may contain Phi. The spiraling of the additive process of Protons (and possibly Neutrons) would seem to be a perfect example of what Fibonacci visualized in the "Rabbit Riddle," the self-replicating growth in geometry and nature.

Good luck,

Jim D. Bourassa

From: Jim Bourassa
To: David Thomson
Sent: Saturday, September 20, 2003 12:35 PM
Subject: David Thomson - atomic structure / "paired vortex" arrangement

Hi, Dave:

Your work on the atomic structure is nothing short of brilliant! I wanted to take the time to really read it before responding. I think we are very close to having enough information to publish these combined works. We need to meet when you are ready...

It is interesting that the Magic Numbers are all even. One theory that I have not put on the website yet is the belief that a "paired vortex" arrangement is preferred in the nucleon structure. In other words, the structure looks like those old-fashion ashtrays you find in public places. It is two cones with the mouth facing outward and the apexes joined. The "mouth" is the halo orbits of the toroidal vortex. Nature likes balance.

Does that make sense?
…

Thanks,

Jim

From: David Thomson
To: Jim Bourassa
Sent: Sunday, September 21, 2003 9:18 AM
Subject: Blow your mind

Hi Jim,

This is something you might easily relate to. I discovered the numbering system used by the Aether. This numbering system is related to nuclear spin, nuclear structure, the Golden Ratio, and the four-phase sine wave.

You wanted to know if the Golden Ratio showed up in the Quantum Physics Model. Now I can tell you it does.

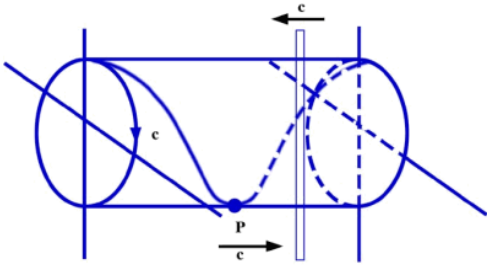
Dave
[Later on I went on to discover equations for the electron and proton g-factors that also involved Phi and phi.]

From: Jim Bourassa
To: David Thomson
Sent: Sunday, September 28, 2003 10:31 AM
Subject: David Thomson / The Triple Helix

Hi, Dave:

As I was watching my "Roomba" clean (a robotic floorvac) in a perfect logarithmic spiral, an interesting solution came to me. IF we make the assumption that the basics of QM, QED, QCD, QFT, and GR are all fundamentally correct... AND that our Aether theories are ALSO correct (a dynamic Aether instead of empty space, the structure of first generation particles is a toroidal helicoid geometry with opposing streams, and the Aether is a simple explanation of the forces and the photon)... THEN we have an interesting constraint in the ultimate design of particles. This is the conclusion I came to:

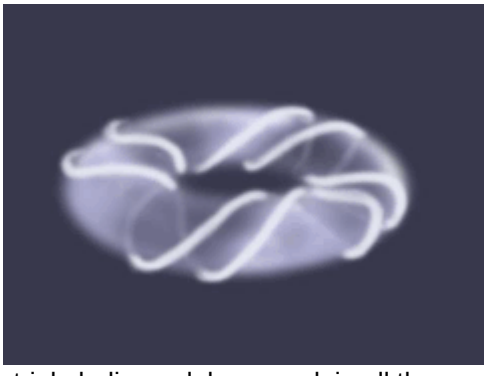
Photons are single linear helical propagations (the Photon Wave of Spiro: http://www.geocities.com/spyzaf/Inertia.htm)

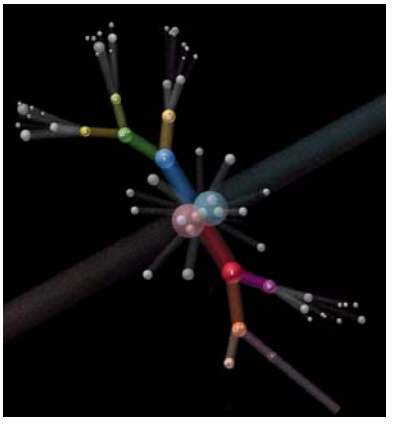


Electrons are single circular propagations (the Toroidal Helicoid Model)
Note: This explains QED, the strong link between Photons and Electrons

Mesons are double helix toroidal helicoids (this is the model we both see - with opposing streams tightly linked). Note: All Mesons are unstable.

Protons and Neutrons are triple helix toroidal helicoids (this was the surprising conclusion I reached, which is required if one assumes QCD is a correct sub-model of particles and fields). The double and triple helix explains the quark confinement theory, because each helix is tightly bound, with an opposite next to it: UDU for a Proton or DUD for a Neutron. The triple helix results in extreme stability. There are no "Gluons," the force that binds the particles together is none other than your Aether Force (or GForce).





This single , double, triple helix model can explain all the interactions that physicists measure, but within the confines of Aether theory. The key to the entire theory is the Toroidal Helicoid Model of particles. One can almost "see" the simple beauty of it. The most amazing thing is the correspondence between a living cell (DNA in the Nucleus) and an atomic Nucleus. It is almost as if Nature is reusing the same patterns on different planes of existence. Pure Zen!

Well, back to babysitting the Roomba! Let me know what you think.

Thanks,
Jim

From: David Thomson
To: Jim Bourassa
Sent: Sunday, September 28, 2003 11:41 AM
Subject: RE: David Thomson / The Triple Helix

Hi Jim,

I like the sound of your theory. The possibility of a triple helix could make sense with regard to the phenomena of 1/2-spin and 3/2-spin, which appears to be significant for the structure of matter within Aether. I'm glad you're giving thought to the photon, because I'm not satisfied with my own progress on the photon.

The photon definitely has a surface area, but it also seems to have a spiral of some sort associated with it. The math clearly shows that angular momentum is a line of flux with a given length moving sideways at the speed of light. But with the photon, it would appear that this line of flux stretches as it expands outward. Something has to shrink in order to conserve angular momentum. If the area is expanding, then the mass must be thinning out. And what about the time dimension? Does the time dimension change,

or is it constant? I don't know.

I suppose it is possible that the line of flux would shift its angle as it left the source electron, thus giving it a spiral appearance. And if that is the case, then the angle must be quantifiable through some simple equation.

But the whole concept of a circle of flux as being the basis for angular momentum is merely a mathematical concept to assist in visualizing subatomic processes. My guess is that there is another interpretation of the dimensions that produces a more workable geometry (a geometry that doesn't look like an open ended cylinder bent to a half toroid shape). I would be more comfortable with completely closed surfaces with a specific, fairly simple geometry.

You may be on to something with the spiral lines. But until it is quantified, I can't be certain. We need to find a way to quantify what you are saying. The number three shows up in the Aether as 1-spin. Even though subatomic particles each have half-spin, the edts of the Aether seems to have one spin.

If you remember from the last post I sent, zero spin is equal to the integer 1, half-spin is equal to the integer 2, and one spin is equal to the integer three. If the Aether has one spin, but the subatomic particles each have half-spin, then we need to find out where the zero spin went to and form an equation. The equation may have the form

half-spin + zero spin = one spin

subatomic particle + X = Aether edts

or

Aether edts - subatomic particle (h) = X

But that can't work because edts and h are in different dimensions.

If we divide edts by h, we get a velocity per charge. If the velocity pertains to the speed of the precession (of the magnetic moment), then

$$\frac{edts}{h} = \frac{c}{e.emax^2}$$

or

$$edts = \frac{phtn}{e.emax^2}$$

for some reason, h has half-spin, but h times c has one spin, as it is known that a photon has one spin. As you can see from the equation, edts has one spin and phtn has one spin, which is in agreement. But how did h change from half-spin to one spin by becoming a photon? Perhaps c has one spin? Perhaps the precession has one spin? Perhaps spin is added when dimensions are multiplied and subtracted when dimensions are divided? This is something to contemplate for a while.

I've just had an insight. Maybe we need to modify the math?

$$\frac{edts.3}{h.2} = \frac{c.3}{e.emax^{2.2}}$$

becomes

$$edts.3 = \frac{phtn.5}{e.emax^{2.2}}$$

The spin is represented after the period with its integer value. Looking at only the spin component...

3 3
-- = -- -----> 3 = 3 + 2 - 2
2 2

Notice that 5/2 appears on the right side of the equation? The denominator is part of a squared dimension. If we simplify the denominator we get

sqrt(5)

2

By simply adding and subtracting 1/2 from this value we get Phi and phi, or the Golden Ratios. I know it seems a bit of a stretch, but it is interesting to look at.

I'll have to find other situations with different spin values to check it against. Charge is given 2 integer (half-spin) because it has half-spin in the Unified Field Equation.

Dave
[note: edts is the same as rmfd, edts stands for electrodynamic toroidal spin]

From: Jim Bourassa
To: David Thomson
Sent: Sunday, September 28, 2003 12:04 PM
Subject: Re: David Thomson / The Triple Helix

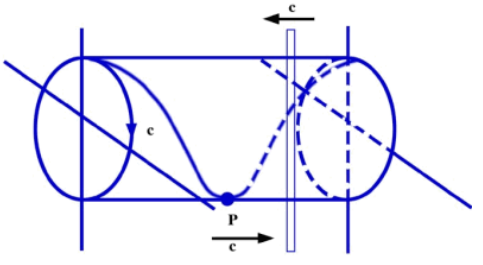
Hi, Dave:

I will review your calculations. Bear with me, math is not my strong point! (humor).

Meanwhile, this may answer your question as far as visualization...

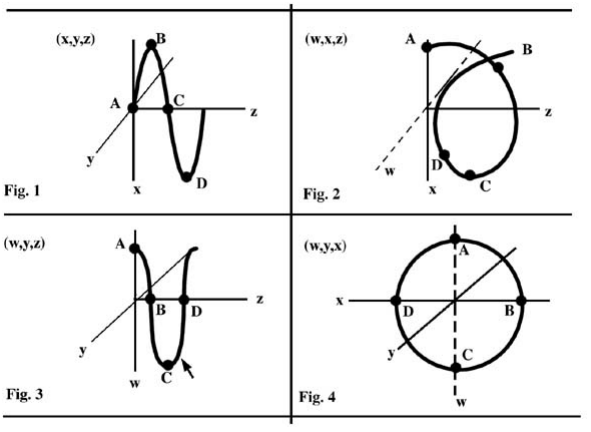
In the standard model of particle physics, particles are points moving through space, tracing out a "World Line." To take into account the different interactions observed, one has to provide particles with additional degrees of freedom beyond position and velocity, including mass, electric charge, color charge and spin. In String Theory, all particle types are replaced by a single fundamental building block called a string.

The goal here is to try to visualize a basic string-like theory as developed by Kaluza and Klein. Kaluza first developed this method in 1919. In his original work it was shown that if we start with a theory of general relativity in 5-spacetime dimensions and then curl up one of the dimensions into a circle we end up with a 4-dimensional theory of general relativity plus electromagnetism. If we assume that the electron has a degree of freedom corresponding to a point on a circle, and that this point is free to vary on the circle as we move around in spacetime, we find that the theory must contain the photon and that the electron obeys the equations of motion of electromagnetism (namely Maxwell's equations).



In 1926 Oskar Klein extended this idea. Instead of assuming total independence of the extra dimension, he assumed it to be compact. This means the fifth dimension would have the topology of a circle, with a radius of the order of the Planck length. The Kaluza-Klein mechanism simply gives a geometrical explanation for this circle: it comes from an actual fifth dimension that has been curled up:

We shrink the helix along the z-axis letting it becoming a rotating circle on the w-x axis, by the use of the Lorenz contraction. This will give point P the required linear velocity no matter what direction it rotates as long as the linear velocity is c, but if we contract space we must also contract time, thus slowing down the Photon Wave rotation. This then will not work. The only other thing then is to allow the rotation of the helix to be only in the direction in which the point seems to move along the helix opposite the direction that the Photon Wave is traveling as shown in this figure. In doing so the linear velocity of point P will be 0. What we would observe then would be a standing wave traveling a c. The wave passing through the bar area would have a measured velocity of c. This will also be true if the velocity is measured from any other frame of reference.



The object represents a superimposition of three objects if viewed in 3-D slices. A helix in the w-x-z coordinates, a sine wave in the x-y-z coordinates, and a circle in the w-x-y coordinates, as shown in this figure. Being viewed in these three-dimensional slices the object can be defined as both open and closed-ended. We will define the 4 dimensional object as representing light. Maxwell's wave theory will be shown to be defined by the sine wave in the x-y-z coordinates, while the quantum nature of light will be defined by the helix's end points rotating on the circle in the w-x-y coordinates.

Chapter 13

THE BEGINNING

> Your focus determines your reality! – Quai Gon Jing, Star Wars Episode 1

Our culture is presently being bombarded with a continuous stream of fictional stories ranging through space wars, fabled epic adventures, alternate realities, virtual realities, and magical adventures. Much of it is high tech filmography, "eye candy" as some call it. There are people flying on broomsticks, flying in Delorean cars, flying in faster than light-speed space ships, or even just plain flying without anything at all to support them. Objects fly to one's hand by mere will, sparks fly out of wands, computers build a virtual reality for humans, and rings hold the power of the most evil force. Interspersed with the fanciful thinking are plots of varying strengths conveying human values and hopes, as good triumphs over evil while overcoming inevitable human shortcomings and fears.

In each story there is a scientific aspect (mostly science fiction) and a religious aspect (mostly portrayed by exceptionally good and exceptionally evil characters). It seems humanity as a whole has a need to understand the world from both a philosophical viewpoint and a realistic one (even if it is an illusion of realism). The scripts of the more successful stories confirm the storytelling industry either consciously or unconsciously understands these human needs.

But our present scientific and religious institutions apparently do not understand the needs of the human psyche. In its effort to keep religion out of science, science itself has become a religion. In addition, the teachings of science, particularly in the quantum physics department, seem to have more farfetched theories than some of the most improbable movies. Physicists with PhDs spend 8 to 12 years of their lives studying so that they can proudly boast that physics is not understandable. They tell the world about wave/particle duality, color force, particle flavor, up/down characteristics, energy-mass equivalence, tiny bullets of light, particles existing as probability functions, Higgs

Bosons, time travel via Special Relativity, and other things equally as strange as people flying on broomsticks, computer generated virtual reality, and the rest of Hollywood fare. Try to dispute the equivalence of energy and mass and you receive half a dozen flawed arguments and not one good one to support it. If you attempt to dispute these wild and improvable hypotheses you are branded a crackpot, and that is the end of the discussion, because the prevailing theories claim to predict the data.

Religion has fared no better. There must be over 1000 variations of a dozen major religious institutions. Every one of them preaches its version of the truth and most point to the failings of the others. Within each organization, there are the few "privileged ones" who think they know more about truth than the multitude. Some withhold this knowledge either for personal gain or because they believe that others aren't ready to know.

Fortunately, we currently live in a society with freedom of speech and have Hollywood to fulfill the scientific, and religious, needs of the masses for relatively little cost per person.

Wouldn't it be nice if theories of quantum physics were comprehensible, and mathematically and geometrically correct? Wouldn't it be nice if science could unequivocally show the nature of the true Creator of the Universe? Wouldn't it be nice if quantum physics could be taught in high school because it was so simple to understand?

Knowledge as clear and simple as the Aether Physics Model could be the beginning of a new era. This could be the era where science and religion finally merge. This could be the beginning of a new enlightenment, an enlightenment where everyone shares in the most fundamental knowledge of physical experience.

The Aether Physics Model is easy to understand and so far it is the most accurate theory of quantum structure ever presented, because it reveals a Unified Force Theory. Our understanding of atoms, molecules, and DNA will soar far beyond our wildest dreams because we can now understand the mechanics at the most primary levels of physical existence. This book presents the elementary concepts of quantum physics. In just under three years, mostly one person with only a high school GED developed this theory, and it reveals much new and fundamental knowledge about the Universe and God. What will happen when other physicists, chemists, biologists, naturalists, philosophers, sociologists, movie producers, and theologians understand this theory? What will happen when the nanotechnology sector understands the Aether Physics Model? The advancements in materials, medicines, processes, and other technologies will accelerate at an astounding rate. Moreover, if people around the planet can see there really is just one God, and if people could learn how the Living God manifests in flowers, shells, seeds, growth patterns, and all of existence, just maybe we can see

that God did not speak to only one group of people. Just maybe we will discover that God speaks equally to male and female, all races, all ethnicities, and all living beings.

If there ever was an opportunity for humanity to gather together peacefully under a single umbrella, the Aether Physics Model is that umbrella.

I hope that this first book has succeeded in showing the broad and solid foundation of the Aether Physics Model. If you found the theory to be coherent and understandable, and if you see the value in the message of this book, then please make an effort to share it with someone. Tell your friends or share your copy. The knowledge in these pages belongs to everyone and transcends any one person or group.

More importantly, if you have any relevant training, then find a unique way to build on this theory. There are numerous opportunities for significant discoveries yet to materialize based on this theory. You could have insights into a new physical or mental process, knowledge for further developing the mathematics, or insights into how consciousness can be quantified and incorporated into the theory. The possibilities are limitless!

The Quantum AetherDynamics Institute has been founded to develop and disseminate the Aether Physics Model (previously known as the Quantum Physics Model). We welcome reports and insights from others. Our plan is to develop a research center that will specifically develop the theory and test new technologies.

Thank you for your interest in the Aether Physics Model and for the opportunity to share this vivid aspiration for science. May your life be enriched with unbounded happiness and the desire to share happiness with all other living beings.

David W. Thomson III

APPENDICES

Appendix I – Known Constants

Constant	Value and Dimensions	Quantum measurements
Compton wavelength	$\lambda_C = 2.426\times10^{-12}\,m$	λ_C
Coulomb's electrostatic constant	$k_c = 8.988\times10^{9}\,\frac{kg\cdot m^3}{sec^2\cdot coul^2}$	$k_c = \frac{m_a{\lambda_C}^3{F_q}^2}{16\pi^2{e_a}^2}$
Elementary Charge	$e^2 = 2.567\times10^{-38}\,coul^2$	e^2
Fine Structure Constant	$\alpha = 7.297\times10^{-3}$	$\alpha = \frac{e^2}{8\pi\cdot{e_{emax}}^2}$
Mass of Electron	$m_e = 9.109\times10^{-31}\,kg$	m_e
Mass of Neutron	$m_n = 1.675\times10^{-27}\,kg$	m_n
Mass of Proton	$m_p = 1.673\times10^{-27}\,kg$	m_p
Newton's gravitational constant	$G = 6.673\times10^{-11}\,\frac{m^3}{kg\cdot sec^2}$	$G = \frac{{\lambda_C}^3{F_q}^2}{m_a}$
Permeability	$\mu_0 = 1.257\times10^{-6}\,\frac{kg\cdot m}{coul^2}$	$\mu_0 = \frac{m_a\lambda_C}{4\pi\cdot{e_a}^2}$
Permittivity	$\varepsilon_0 = 8.854\times10^{-12}\,\frac{\sec^2\cdot coul^2}{kg\cdot m^3}$	$\varepsilon_0 = \frac{4\pi\cdot{e_a}^2}{m_a{\lambda_C}^3{F_q}^2}$
Planck's Constant	$h = 6.626\times10^{-34}\,\frac{kg\cdot m^2}{sec}$	$h = m_e{\lambda_C}^2F_q$
Speed of Light	$c = 2.998\times10^{8}\,\frac{m}{sec}$	$c = \lambda_C F_q$

Appendix II - New Constants

Constant	Value and Dimensions	Quantum measurements
Acceleration	$accl = 3.704\times10^{28}\,\frac{m}{sec^2}$	$accl = \lambda_C F_q{}^2$
Area	$area = 5.887\times10^{-24}\,m^2$	$area = \lambda_C{}^2$
Capacitance	$capc = 2.148\times10^{-23}\,\frac{sec^2\cdot coul^2}{kg\cdot m^2}$	$capc = \varepsilon_0\lambda_C$
Charge	$chrg = 1.400\times10^{-37}\,coul^2$	$chrg = e_{emax}{}^2$
Conductance	$Cd = 2.112\times10^{4}\,\frac{sec\cdot coul^2}{kg\cdot m^2}$	$Cd = \frac{e_{emax}{}^2}{m_e\lambda_C{}^2 F_q}$
Current	$curr = 1.729\times10^{-17}\,\frac{coul^2}{sec}$	$curr = e_{emax}{}^2 F_q$
Current Density[178]	$cdns = 2.938\times10^{6}\,\frac{coul^2}{m^2\cdot sec}$	$cdns = \frac{e_{emax}{}^2 F_q}{\lambda_C{}^2}$
Double Cardioid (page 48)	$dcrd = 2.181\times10^{5}\,\frac{m^3}{sec^2}$	$dcrd = \lambda_C{}^3 F_q{}^2$
Drag (page 126)	$drag = 8.207\times10^{28}\,\frac{kg\cdot m^3}{sec\cdot coul^4}$	$drag = \frac{m_e\lambda_C{}^3 F_q}{e_{emax}{}^4}$
Eddy Current[90] (page 121)	$eddy = 2.241\times10^{7}\,\frac{kg^2\cdot m^4}{sec^2\cdot coul^4}$	$eddy = \frac{m_e{}^2\lambda_C{}^4 F_q{}^2}{e_{emax}{}^4}$
Electric Charge Density	$chgd = 9.799\times10^{-3}\,\frac{coul^2}{m^3}$	$chgd = \frac{e_{emax}{}^2}{\lambda_C{}^3}$
Electric Field Strength[179] (page 231)	$elfs = 2.411\times10^{35}\,\frac{kg\cdot m}{sec^2\cdot coul^2}$	$elfs = \frac{m_e\lambda_C F_q{}^2}{e_{emax}{}^2}$

[178] CURRENT DENSITY. (1) A vector representing the time rate of flow of electric charge per unit area. The direction of the vector is the direction of positive charge flow; the magnitude is the limit of the flow rate per unit area as the area approaches zero. The area considered is perpendicular to the direction of flow. Walter C. Michels, International Dictionary of Physics and Electronics (New Jersey: Van Nostrand, 1956) 206.

[179] "Electric Field Strength (Elec. Eng).. The strength of an electric field at any point; measured by the force in dynes exerted on a unit charge at the point. " C. F. Tweney and L. E. C. Hughes, eds., Chambers's Technical Dictionary (Englewood Cliffs, NJ: W.& R. Chambers, 1958) 285.

Constant	Value and Dimensions	Quantum measurements
Electric Flux Density[180]	$efxd = 2.378\times10^{-14}\,\frac{coul^2}{m^2}$	$efxd = \frac{e_{emax}{}^2}{\lambda_C{}^2}$
Energy (Tshankha)	$enrg = 8.187\times10^{-14}\,\frac{kg\cdot m^2}{sec^2}$	$enrg = m_e\lambda_C{}^2F_q{}^2$
Flow	$flow = 1.765\times10^{-15}\,\frac{m^3}{sec}$	$flow = \lambda_C{}^3F_q$
Force	$forc = .034\times10^{0}\,\frac{kg\cdot m}{sec^2}$	$forc = m_e\lambda_C F_q{}^2$
Frequency	$freq = 1.236\times10^{20}\,\frac{1}{sec}$	$freq = F_q$
Friction (page 125)	$fric = 1.014\times10^{49}\,\frac{kg\cdot m^3}{sec^2\cdot coul^4}$	$fric = \frac{m_e\lambda_C{}^3F_q{}^2}{e_{emax}{}^4}$
Gyration (page 125)	$gyro = 4.179\times10^{60}\,\frac{kg\cdot m^2}{sec^2\cdot coul^2}$	$gyro = \frac{m_e\cdot\lambda_C{}^2\cdot F_q{}^2}{e_{emax}{}^4}$
Inductance	$indc = 3.049\times10^{-18}\,\frac{kg\cdot m^2}{coul^2}$	$indc = \mu_0\lambda_C$
Irradiance (page 132)	$irrd = 1.718\times10^{30}\,\frac{kg}{sec^3}$	$irrd = m_eF_q{}^3$
Length	$leng = 2.426\times10^{-12}\,m$	$leng = \lambda_C$
Light	$ligt = 2.454\times10^{-5}\,\frac{kg\cdot m^3}{sec^3}$	$ligt = m_e\lambda_C{}^3F_q{}^3$
Magnetic Field	$mfld = 1.149\times10^{-8}\,\frac{kg\cdot m^3}{sec\cdot coul^2}$	$mfld = \frac{m_e\lambda_C{}^3F_q}{e_{emax}{}^2}$
Magnetic Flux	$mflx = 4.734\times10^{3}\,\frac{kg\cdot m^2}{sec\cdot coul^2}$	$mflx = \frac{m_e\lambda_C{}^2F_q}{e_{emax}{}^2}$

[180] "Electric Flux Density (Elec. Eng).. The integration of the electric field intensity per unit area, the integration being taken over an elementary area normal to the direction of the field intensity. It is the same as *displacement* (q.v. *Diel.*)." C. F. Tweney and L. E. C. Hughes, eds., Chambers's Technical Dictionary (Englewood Cliffs, NJ: W.& R. Chambers, 1958) 285.

Constant	Value and Dimensions	Quantum measurements
Magnetic Flux Density	$mfxd = 8.042 \times 10^{26} \frac{kg}{sec \cdot coul^2}$	$mfxd = \frac{m_e F_q}{{e_{emax}}^2}$
Magnetic Flux Strength	$mfst = 7.128 \times 10^{-6} \frac{coul^2}{m \cdot sec}$	$mfst = \frac{{e_{emax}}^2 F_q}{\lambda_C}$
Mass	$mass = 9.109 \times 10^{-31} kg$	$mass = m_e$
Mass Density	$masd = 6.377 \times 10^{4} \frac{kg}{m^3}$	$masd = \frac{m_e}{{\lambda_C}^3}$
Mass to Charge Ratio (Electromagnetism) (page 48)	$mchg = 6.508 \times 10^{6} \frac{kg}{coul^2}$	$mchg = \frac{m_e}{{e_{emax}}^2}$
Momentum	$momt = 2.731 \times 10^{-22} \frac{kg \cdot m}{sec}$	$momt = m_e \lambda_C F_q$
Photon (page 192)	$phtn = 1.986 \times 10^{-25} \frac{kg \cdot m^3}{sec^2}$	$phtn = m_e {\lambda_C}^3 {F_q}^2$
Potential	$potn = 5.849 \times 10^{23} \frac{kg \cdot m^2}{sec^2 \cdot coul^2}$	$potn = \frac{m_e {\lambda_C}^2 {F_q}^2}{{e_{emax}}^2}$
Power	$powr = 1.012 \times 10^{7} \frac{kg \cdot m^2}{sec^3}$	$powr = m_e {\lambda_C}^2 {F_q}^3$
Pressure (Energy Density)	$pres = 5.732 \times 10^{21} \frac{kg}{m \cdot sec^2}$	$pres = \frac{m_e {F_q}^2}{\lambda_C}$
Resistance	$resn = 3.382 \times 10^{40} \frac{kg \cdot m^2}{sec \cdot coul^4}$	$resn = \frac{m_e {\lambda_C}^2 F_q}{{e_{emax}}^4}$
Resonance (page 126)	$rson = 1.527 \times 10^{40} \frac{1}{sec^2}$	$rson = {F_q}^2$
Rotating Magnetic Field (page 63)	$rmfd = 1.419 \times 10^{12} \frac{kg \cdot m^3}{sec^2 \cdot coul^2}$	$rmfd = \frac{m_e {\lambda_C}^3 {F_q}^2}{{e_{emax}}^2}$
Shock Frequency	$shkf = 4.169 \times 10^{18} \frac{kg \cdot m}{sec^3}$	$shkf = m_e \lambda_C {F_q}^3$

Constant	Value and Dimensions	Quantum measurements
Specific Charge	$spch = 102.052 \times 10^{0} \frac{m^3}{coul^2}$	$spch = \frac{\lambda_C{}^3}{e_{emax}{}^2}$
Specific Volume	$spcv = 1.568 \times 10^{-5} \frac{m^3}{kg}$	$spcv = \frac{\lambda_C{}^3}{m_e}$
Stroke (page 50)	$strk = 4.206 \times 10^{13} \frac{m^2}{coul^2}$	$strk = \frac{\lambda_C{}^2}{e_{emax}{}^2}$
Surface Charge	$sfch = 8.240 \times 10^{-61} m^2 \cdot coul^2$	$sfch = \lambda_C{}^2 e_{emax}{}^2$
Surface Density	$sfcd = 1.547 \times 10^{-7} \frac{kg}{m^2}$	$sfcd = \frac{m_e}{\lambda_C{}^2}$
Surface Tension	$sten = 1.391 \times 10^{10} \frac{kg}{sec^2}$	$sten = m_e F_q{}^2$
Sweep (page 156)	$swep = 7.274 \times 10^{-4} \frac{m^2}{sec}$	$swep = \lambda_C{}^2 F_q$
Temperature (page 132)	$temp = 8.988 \times 10^{16} \frac{m^2}{sec^2}$	$temp = \lambda_C{}^2 F_q{}^2$
Time	$time = 8.093 \times 10^{-21} sec$	$time = T_q$
Torque	$torq = 2.210 \times 10^{-42} kg \cdot m$	$torq = m_e \lambda_C$
Velocity (page 154)	$velc = 2.998 \times 10^{8} \frac{m}{sec}$	$velc = \lambda_C F_q$
Viscosity	$visc = 46.389 \times 10^{0} \frac{kg}{m \cdot sec}$	$visc = \frac{m_e F_q}{\lambda_C}$
Volume	$volm = 1.428 \times 10^{-35} m^3$	$volm = \lambda_C{}^3$
Wave Number (page 97)	$wavn = 4.121 \times 10^{11} \frac{1}{m}$	$wavn = \frac{1}{\lambda_C}$

Glossary

Aether unit – The primary unit of physical and non-material existence equal to $16\pi^2$ times Coulomb's constant.

Anti-matter – Matter that has opposite spin direction to normal matter.

Anti-proton - The antiparticle of the proton.*

Charge – [Dimension] The intrinsic property of Aether, inherited by angular momentum, and responsible for all electric phenomena.* [Measurement] The measure of the dimension of charge.

Conductance, Aether - A measure of the Aether's ability to conduct electric charge.

Constant - A quantity assumed to have a fixed value in a specified mathematical context.* Quantum measurements and quantum units are also constants.

Constant of proportionality – A phrase used to obfuscate the true nature of a constant.

Dimension - an expression of the character of a derived quantity in relation to fundamental quantities, without regard for its numerical value.* In the APM the spherical constant of 4π is also considered a dimension, along with mass, length, frequency, and charge.

Double cardioid – A natural geometrical construct of space-resonance, which characterizes as two parallel cardioids with opposite spin.

Double loxodrome – Similar to loxodrome except that it extends over the surface of two adjoining spheres.

Electron – A stable onn having the angular momentum equal to Planck's constant.

Elementary charge – The charge imparted by the Aether unit when an onn occupies one of the four Aether spin positions. The elementary charge has the same magnitude for all charged onta, but it can be negative or positive depending on which Aether sphere the onn occupies. Elementary charge has a solid angle of 1.

Energy – A unit with the dimensions of mass times velocity squared. Energy is a unit for quantifying the amount of work performed by onta, but energy is not an object of itself.

Frequency – [Dimension] The property or condition of occurring at regular intervals. [Measurement] The number of times a specified periodic phenomenon occurs within a specified interval. *

Friction – A unit in the Aether Physics Model equal to resistance times velocity.

Gforce – An enormous, all-pervading force that drives the physical Universe, equal to $1.21\times10^{44}\,newton$.

Hutchison effect – The phenomena produced when bombarding materials with microwaves and electrons at a specific combination of frequency and charge density. Effects witnessed are objects accelerating upward and the rearranging of molecular structure without affecting atomic structure. First reported by John Hutchison.

Inertia – The quality of the dimension of mass, which causes objects in motion to stay in motion and objects at rest to stay at rest.

Length – [Dimension] The state, quality, or fact of being long. * [Measurement] The measurement of the length dimension.

Light – A unit in the Aether Physics Model equal to the photon unit times the

frequency of photon reproduction.

Loxodrome - The path on a sphere that maintains a fixed compass direction, shown on a sphere as a line crossing all meridians at the same angle.

Mass – [Dimension] The quality that identifies inertia. [Measurement] The measurement of inertia. Mass is not equal to matter, mass is merely a dimension, or a measurement of that dimension.

Measurement - Determination of the magnitude of a quantity by comparison with a standard for that quantity.* In the APM, a quantum measurement is also a dimension with a specific value: mass of the electron, Compton wavelength, etc.

Neutrino (also anti-neutrino) – The quantity of stray angular momentum ejected from a neutron in a beta decay process. It is not a true onn.

Neutron – An onn composed of a proton, captured electron, and captured stray angular momentum. The neutron has ½ spin.

Onn (Onta) – Neither a particle, nor a wave, but the state of stable matter which includes the electron, positron, proton, anti-proton, neutron, anti-neutron, and photon.

Orthogonality – Dimensions and units at right angles to each other.

Photon – A quantum unit of expanding electron angular momentum with 1-spin.

Positron – The anti-onn of the electron having positive charge and ½ spin.

Primary angular momentum – The most primary state of stable matter.

Proton – A stable onn having the angular momentum equal to $1.217\times10^{-30}\,\frac{kg\cdot m^2}{sec}$ and half-spin.

Quantum Structure – A new branch of physics complimentary to Quantum Mechanics, which describes the *structure* of quantum existence as opposed to its *mechanics*.

Reach – The constant of length per Aether mass coexisting with the Gforce acting through the gravitational constant.

Space-time – Referring to the product of three dimensions of length at 90 degrees to each other and one dimension of linear time.

Space-resonance – Referring to the product of three dimensions of length at 90 degrees from each other and two dimensions of distributed frequency.

Spherical charge – The geometry of elementary charge caused by the geometry of distributed frequency.

Spin position – The location within a quantum Aether unit where angular momentum resides. Each Aether unit contains four spin positions with the characteristics of positive-right spin, positive-left spin, negative-right spin, and negative-left spin.

Steradian – A unit of measure equal to the solid angle subtended at the center of a sphere by an area on the surface of the sphere that is equal to the radius squared: The total solid angle of a sphere is 4π steradians. *

Stroke – The constant of length per Aether strong charge coexisting with the Gforce acting through the rmfd constant.

Strong charge – The electromagnetic charge possessed by all onta and directly proportional to the mass of the onta.

Time – [Dimension] The dimension in which all references to intervals occur. [Measurement] The measurement of intervals.

Tshankha – The electron quantum unit of energy.

Unit – A specific combination of quantum measurements that yields a

specific physical property: velocity, friction, magnetic field, potential, etc. Quantum units are also constants.

Weak interaction - A fundamental interaction between onta that is several orders of magnitude weaker than the electromagnetic interaction and is responsible for some particle decay, nuclear beta decay, and neutrino absorption and emission.*

* Definitions quoted from The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2003 by Houghton Mifflin Company.

APM Highlights

The Aether Physics Model includes many new physics concepts to explain Quantum Structure. The parameters induce directly from empirical measurements of electrons, protons, Coulomb's constant, the Newton gravitational constant, Planck's constant, the speed of light, and the permeability and permittivity of space.

New from Aether Physics Model

- Unified Force Theory - Unifies all fundamental forces
- Geometrical model of space and resonance – Space gets its curvature from resonance
- Space-resonance is more fundamental than Space-time
- Identification of Aether as rotating magnetic field
- Evidence of a non-material creator through analysis of Gforce and dimensions
- Quantification of consciousness
- Identification of dark matter as primary angular momentum
- Neutrino quantifies as captured dark matter between folded Aether units in neutron
- Proton and neutron fine structure constants quantified
- Matter and anti-matter are gravitationally repulsive
- Electron binding energy equation

Corrections to Standard Model

- Strong force carrier quantified as manifestation of charge instead of gluon or pi meson
- Weak nuclear "force carrier" quantified as proportion of elementary to strong charge
- All charge is distributed, not single dimension (as observed by Charles Coulomb)
- Physical origin of fine structure constants quantified
- Proton and neutron angular momenta quantified
- Mass-energy equivalence theory not required
- Energy and mass are not "things" and cannot be converted to each other
- Subatomic "particles" identified as primary angular momentum encapsulated by Aether
- More precise definitions of dimensions and units
- Photon quantified as a true quantum "particle" and capable of being modeled
- Photons can be created from outside of space-time
- Expanding Universe quantified as photon construction via law similar to Casimir effect
- Casimir equation corrected
- Corrected value of neutron g-factor
- Corrected value of neutron magnetic moment
- All energy has two phases, positive and negative
- Resonance is a distributed unit and there are three primary resonances in LC circuits

New System of Quantum Units

- Rotating Magnetic Field is a unit
- Conductance is a constant of "free space" (Aether)
- Photon is a unit
- Light is a unit
- Eddy current is a unit
- Friction is a unit
- Resonance is a unit

CREDITS

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Not everyone listed in the credits are supporters of the Aether Physics Model. Some people were (and may still be) active opponents of the Aether Physics Model, but their questions and criticisms led to the exploration of physics topics that might not otherwise have been explored. Others have simply asked the right questions at the right time. While seeking answers to these questions, the authors gained further insights into the Aether Physics Model.

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